OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

JULY 10, 1950
VOLUME 39, NO. 14

AMERICAN DYESTUFF REPORTER

DEVOTED TO TEXTILE CHEMISTRY • BLEACHING • DYEING • PRINTING • FINISHING

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Customer satisfaction demands fast colors for many of today's rayons. Du Pont Ponsol* and Leucosol*... anthraquinone-type dyes... and Sulfanthrene*... thioindigoid and related dyes... produce superior light and wet fastness on rayons.

You can choose from a wide selection of Du Pont vat dyes to get attractive shades of outstanding fastness and uniformity.

Investigate the selection and application of these dyes. Our Technical Staff will be glad to help you. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Del.

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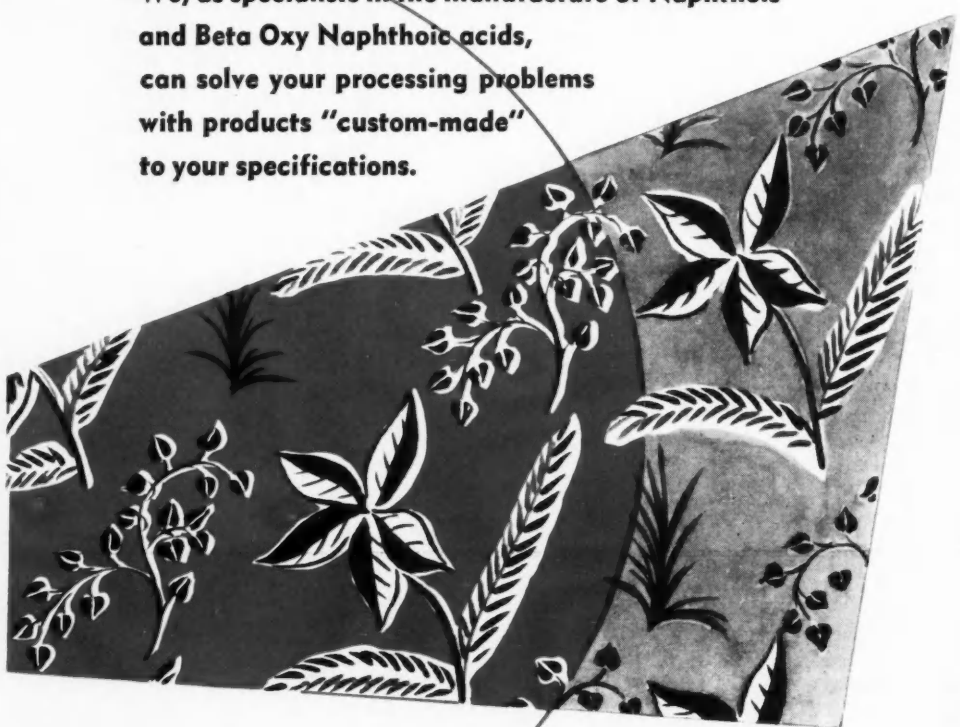

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- Glauber's Salt, Anhydrous & Crystal
- Sulfuric Acid
- Sulfan* (Stabilized Sulfuric Anhydride)
- Acetic Acid
- Sodium Silicate
- Aqua Ammonia
- Hydrochloric Acid (Muriatic Acid)
- Tetrasodium Pyrophosphate, Anhydrous
- Sodium Tripolyphosphate
- Sodium Metasilicate
- Sodium Sulfite, Anhydrous
- Sodium Bisulfite, Anhydrous
- Oxalic Acid
- Aluminum Chloride, Solution
- Disodium Phosphate, Anhydrous
- Nitre Cake (Sodium Bisulfate)
- Trisodium Phosphate
- Sodium Thiosulfate (Hypo)
- Aluminum Sulfate
- Lead Acetate
- Mixed Acid
- Epsom Salt
- Chrome Alum
- Ammonia Alum
- Potash Alum
- Ammonium Sulfate

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IN DYEING, the kind of results you get depend greatly upon the quality of the chemicals you use. Be sure they're always uniform, always dependable *before* your cloth tells you otherwise.

SPECIFY "General Chemical"—and you're sure. That's what leaders in the textile industry have known . . . and counted upon . . . for half a century. General Chemical detergents, dyeing assistants and antichlors always do a thorough, dependable job. You can rely on them!

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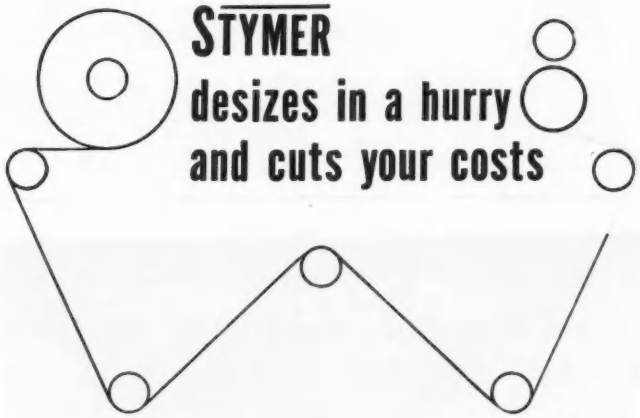
STYMER
desizes in a hurry and cuts your costs



There is no easier warp size to remove than Stymer. Stymer Size is easily rinsed in warm water with a detergent in jigs, becks, and continuous washers. Stymer cuts desizing costs and leaves the goods well prepared for subsequent dyeing and finishing operations. Stymer *itself* has some detergent action. It helps produce clean goods, and results in clearer, brighter, more uniform dyeing.

more Stymer advantages

Stymer size is easily mixed, can be stored for long periods and doesn't gel when cold to clog pipe lines or valves. Build-up on dry cans is held to a minimum, and difficulties with static are reduced or eliminated. The warp is smooth and splits easily at the lease rods. In the weave room, there's a minimum of shedding; no accumulation at the drop wires, heddles or reeds; the warp weaves well and efficiently.

desize STYMER BEFORE any acid treatment

Stymer-sized goods should not be subjected to acid treatment until the size has been removed, as Stymer becomes insoluble when acidified and the cloth requires more vigorous mechanical action than normal to effect complete removal. Enzymes have no value in the removal of Stymer, and are unnecessary.

MERLON S
for spun rayon suitings and dress goods

Merlon S is a leading candidate for the lowest-cost synthetic resin dispersion available for textile finishing. But, more valuable than low price is Merlon's performance.

Because Merlon S does not form a film, up to 15% of the weight of the goods can be applied to spun rayons. The body and fullness of the fabric increases without undue stiffening. At the same time, a dry and lofty hand is produced.

Merlon S is one of a series of fast-selling textile resin dispersions which produce a wide variety of finishes and effects on cotton sheeting, curtains, woolen fabrics, ticking, ironing board and mattress covers, cotton denims, cotton print cloth, as well as rayon dress goods. In each case, the durability, the fullness and body, and the desired sheen is produced.

Mills find the Merlons easy to apply, as these finishes require padding and drying only. Curing and rewashing are not necessary. As replacements for starch, the Merlons have the added quality of durability.

	Type	% Solids	Film Characteristics
Merlon S	Polystyrene	40	non-filming forming (low cost)
Merlon SP	Plasticized Polystyrene	40	continuous soft film
Merlon BR	Polyvinyl Butyral	50	clear, pliable, tough film
Merlon BRS	Plasticized Polyvinyl Butyral	50	somewhat softer than BR
Merlon KR-1	Polyvinyl Acetate	55	easily plasticized
Merlon KR-2	Polyvinyl Acetate	55	irreversible film, clear film properties
Merlon KR-3	Polyvinyl Acetate	35	extreme small particle size
Merlon KR-4	Polyvinyl Acetate	55	high polymer, large particle size
Merlon KR-5	Polyvinyl Acetate	55	medium polymer, medium particle size, vehicle for pigments
Merlon KR-6	Polyvinyl Acetate	55	high polymer, large particle, opaque film

Improve Alkyd Resin Quality with These A.Gross & Company

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SOYA BEAN FATTY ACIDS—A quality fatty acid well accepted by the alkyd resin industry. Remarkably stable and heat resistant for light-colored alkyd resins. Will pass the most rigid color requirements of alkyd resin manufacturers. Reliably uniform . . . a fact appreciated by the discriminating alkyd manufacturer.

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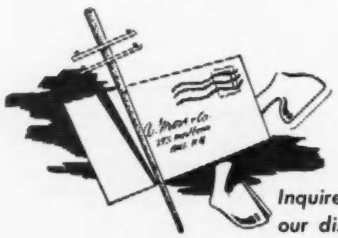
SPECIFICATIONS

Titre °C	25-30
Color Gardner 1933	2-4
Color Gardner 1933—After Heat Test to 500° F.	4-7
Unsaponifiable %	0.3-1.5
Saponification Value	198-202
Acid Value	197-201
Iodine Value	125-135

ADVANTAGES

- √ 1. Unmatched quality and uniformity levels.
- √ 2. Made by special techniques in special equipment.
- √ 3. Minimum color and chemical change under heat.
- √ 4. Heat-Tested, light in color.
- √ 5. Highest Fatty Acid Content produced.



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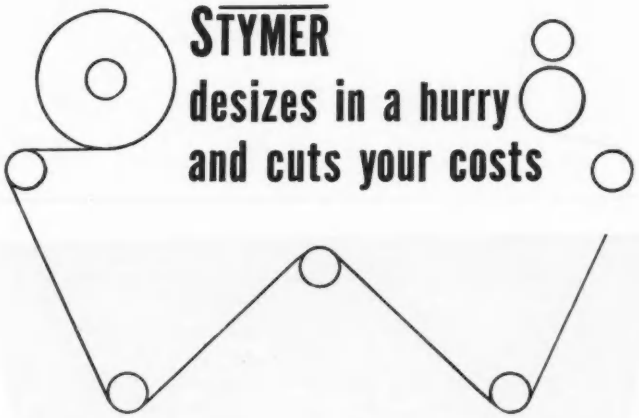

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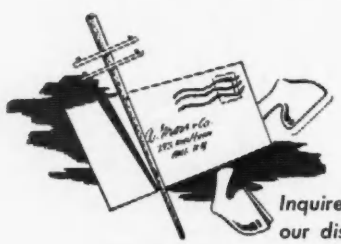

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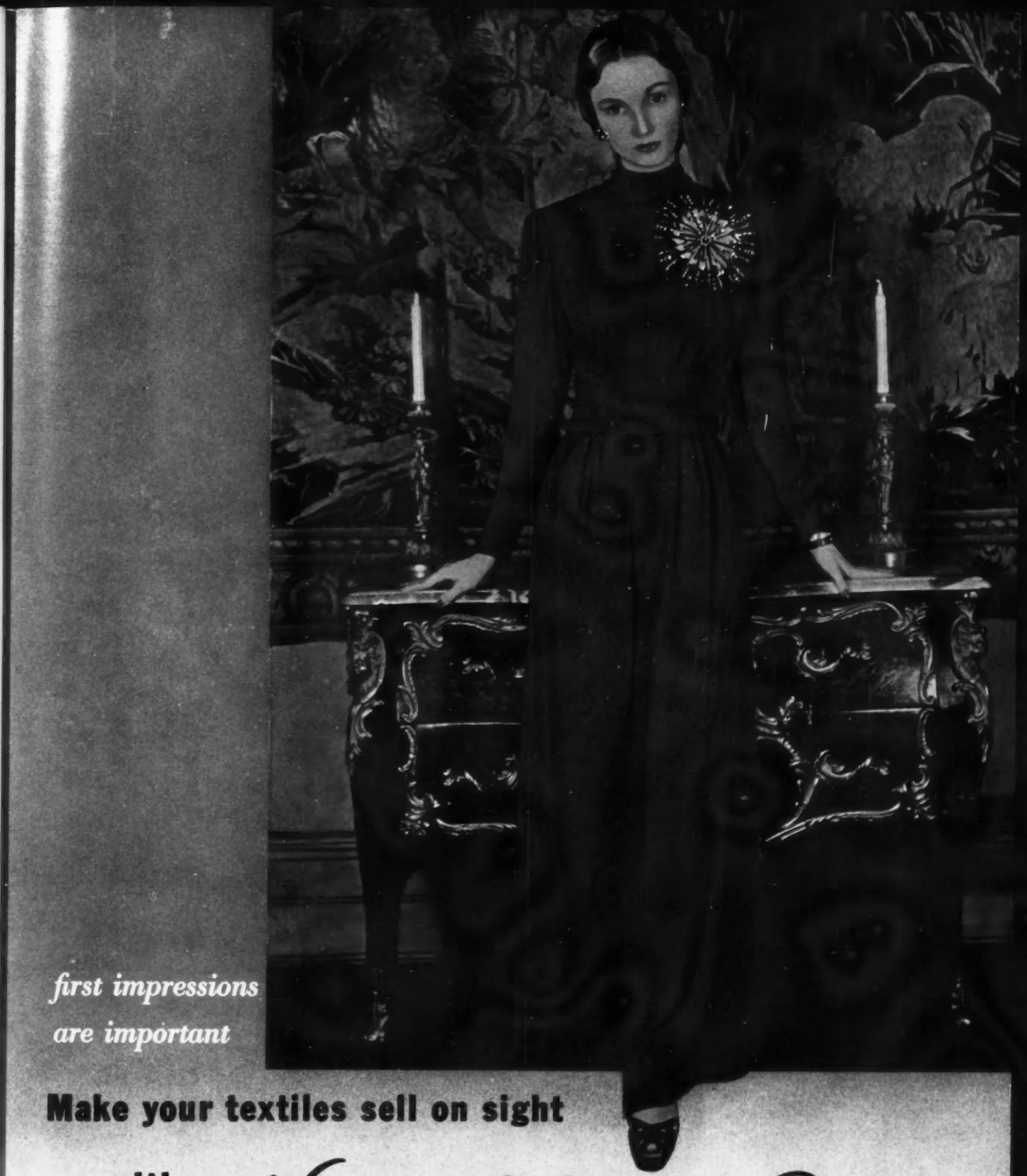

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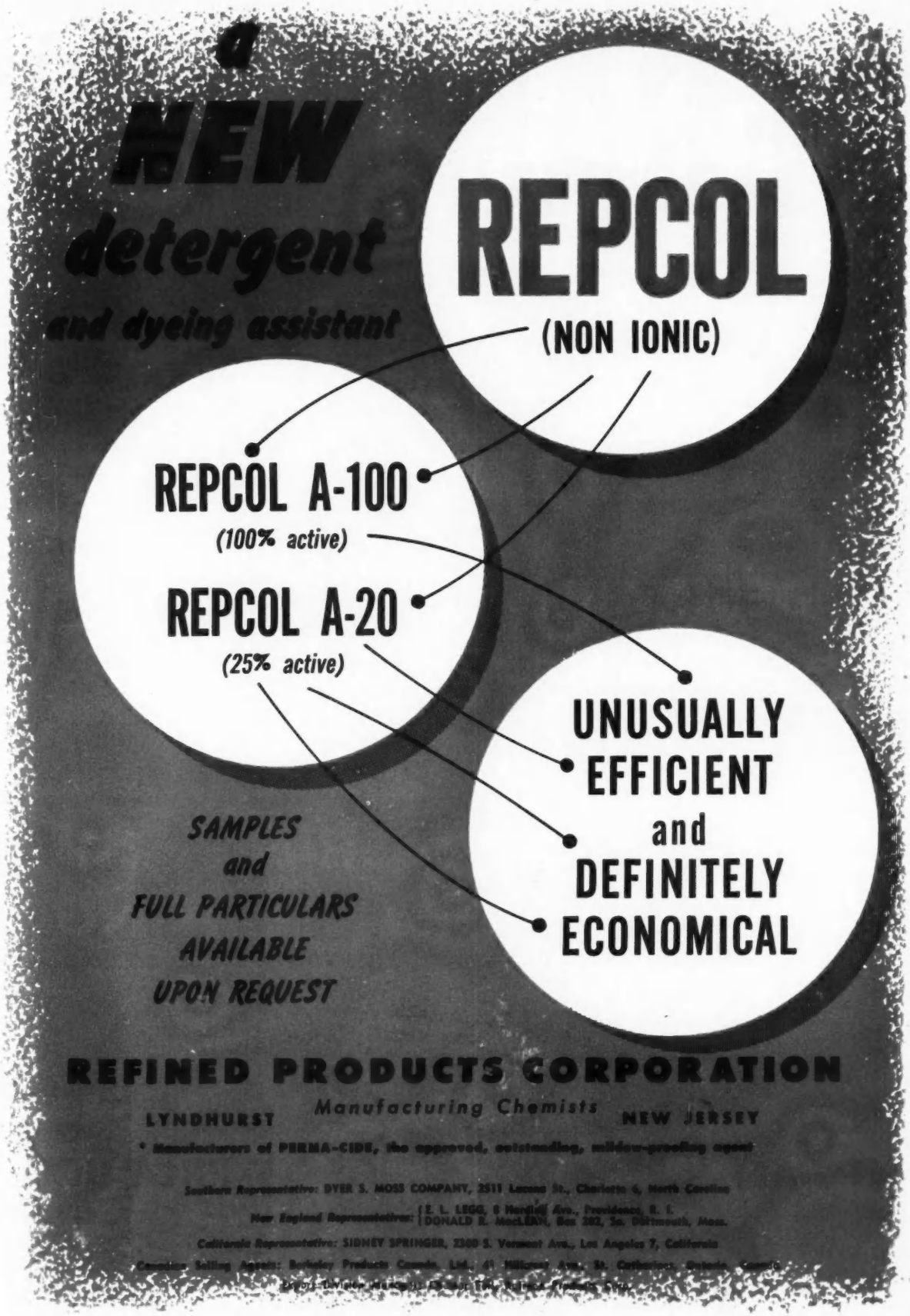
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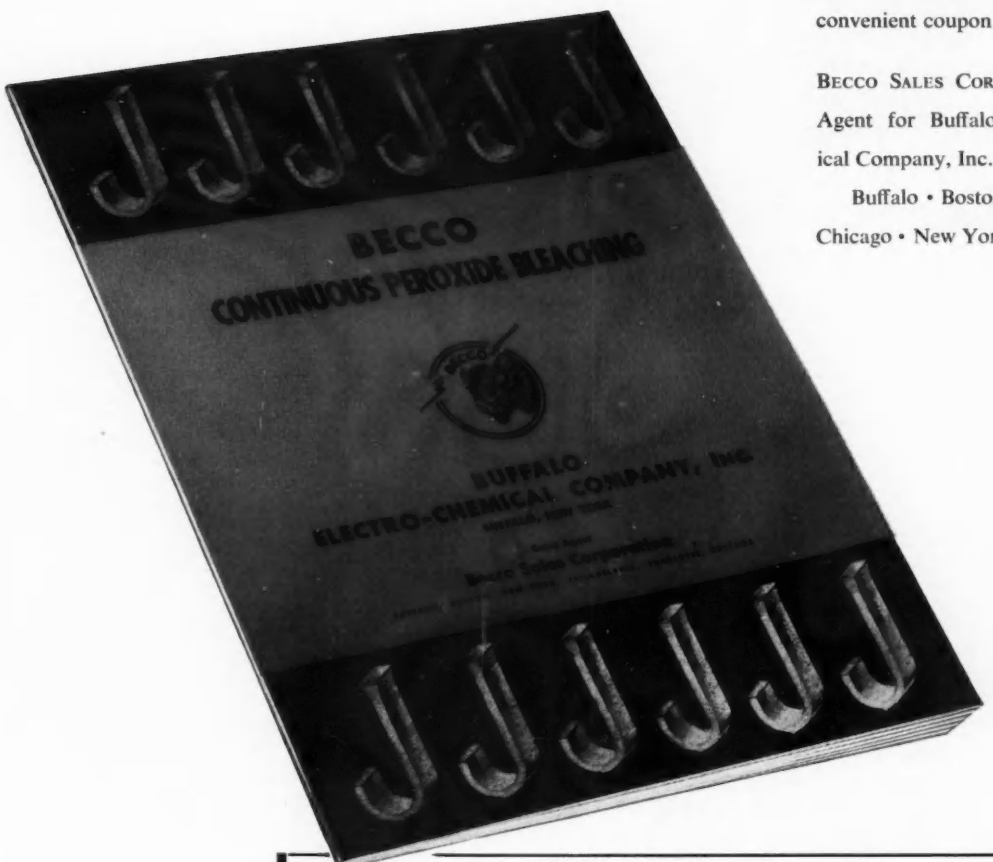

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A good finish—with trouble kept to an absolute minimum—is the first requisite of the men who are responsible for bleaching and dyeing operations. That's not usually achieved by "Rule of Thumb."

Economical operation is very important, too. Diastafor brand de-sizing agent—Type L—is prized for its economy as well as for its superb performance under widely varying conditions of use.

When we say, "You can buy more enzymes per penny with Diastafor," these words have a special meaning for those who are interested in efficiency-plus-economy. Diastafor is made of a blend of enzymes that will work well in a wide temperature and pH range to meet all enzyme de-sizing requirements.

When you use Diastafor—Type L—"too much" is not necessarily *better*. If you are de-sizing by "Rule of Thumb" you may be wasting precious enzymes. Accurate measurement of Diastafor—Type L in your finishing operations will pay out.

Diastafor—Type L is an all-purpose de-sizing agent that will give you a fine performance whether you are working with cottons, rayons or mixed goods. It will help keep your dyeing even and unshaded—free from streaks or blemishes. There is never any impairment of tensile strength, for Diastafor is kind to your fabrics.

If you have not used Diastafor—Type L—in your mill, we'd like to suggest that you give it a trial now—on one of your hardest lots, if you like. You will then see for yourself what it can do to give you easy, economical, trouble-free operation. You'll also know why it has been the leader in its field for so many years.

Write us for prices or more information. Standard Brands Incorporated, *Diastafor* Department, 595 Madison Avenue, New York 22, New York.

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LIXATE BRINE IMPROVES QUALITY OF DYEING

To improve the quality of finished goods by eliminating spots, streaks, and white edges many mills now use saturated Lixate brine in the dye bath instead of dry salt.

When dry salt is added it has a tendency to create areas of concentrated brine around the grains of salt, and these drive excessive quantities of dye into fabrics and cause spots and streaks. Because Lixate brine disperses evenly and immediately through the bath, it helps to eliminate this difficulty and to produce a smooth exhaustion of the dye.

Results at mills that have recently changed from dry salt to Lixate brine indicate that in addition to helping to eliminate re-dyes and achieve greater uniformity of shades, use of Lixate brine also increases plant efficiency and reduces operating costs as well. Because brine is made automatically and piped throughout the plant, the Lixator cuts salt consumption, and also eliminates the work of unnecessary salt handling.

An engineering development of the International Salt Company, Inc., Scranton, Pa., the Lixator consists of a rock salt storage hopper over a dissolving tank with a brine collection chamber. Rock salt flows by gravity into the tank at the same rate it is dissolved, automatically replenishing the supply. Water enters near the top. As water flows downward, it dissolves the rock salt until it becomes fully saturated some distance from the bottom of the tank. From that point on the remaining rock salt acts as a filter bed that removes all insoluble matter from the brine. As a result, when it reaches the collection chamber, the brine is crystal clear and fully saturated.

Many mills report that when they use Lixate brine in the dye bath they use approximately 12 per cent less salt than they did when they added dry salt to the bath. This is because saturated brine is more efficient as the exhausting agent than when dry salt is used directly in the machines. One gallon of saturated brine contains 2.65 pounds of salt but when used as the exhausting agent, one gallon of saturated brine appears to be equivalent to three pounds of dry salt. This is the figure used for best dyeing results by actual experience.

Lixate brine is always crystal clear and neutral—free from acids and alkalies—and for that reason is also used to regenerate zeolite water softeners. The same Lixator provides saturated brine for this purpose as well as for use in the dye vats. Lixators may be made in any size to meet individual plant requirements.

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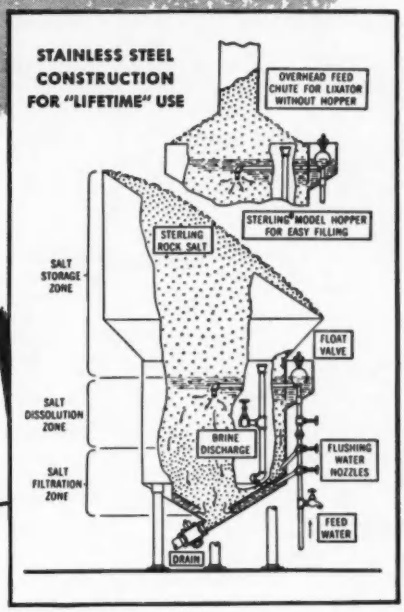

HOW LIXATOR WORKS

In the dissolution zone—flowing through a bed of Sterling Rock Salt which is continuously replenished by gravity feed, water dissolves salt to form 100% saturated brine. **In the filtration zone**—through use of the **self-filtration** principle **originated by International,** the saturated brine is thoroughly filtered through a bed of undissolved rock salt. The rock salt itself filters the brine. Nothing else is needed.

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- ✓ **Unvarying salt content of 2.65 pounds per gallon of brine.**
- ✓ **Crystal-clear brine.**
- ✓ **Continuous supply of brine.**
- ✓ **Automatic salt and water feed to Lixator.**
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• The Lixator *automatically* produces 100% saturated, free-flowing, crystal-clear brine which may be piped to as many points in your plant as you wish—any distance away—by gravity or pump. YOU SIMPLY TURN A VALVE to get self-filtered LIXATE Brine that meets the most exacting chemical and bacterial standards.

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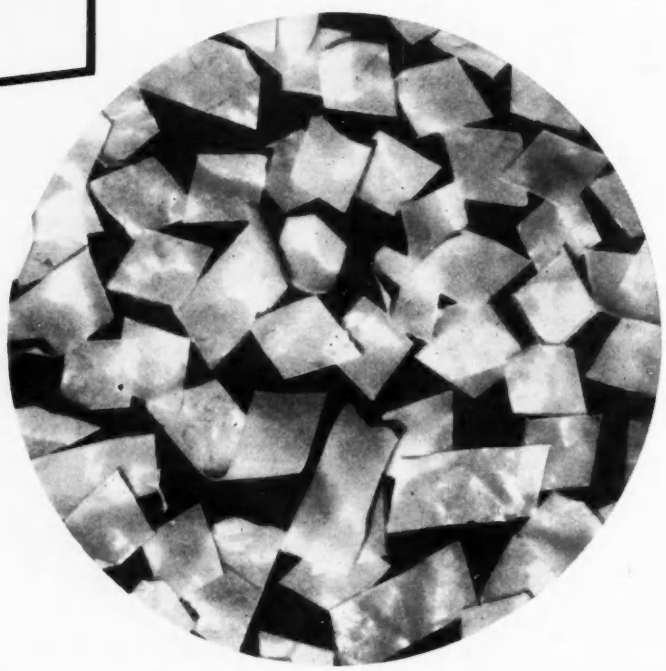

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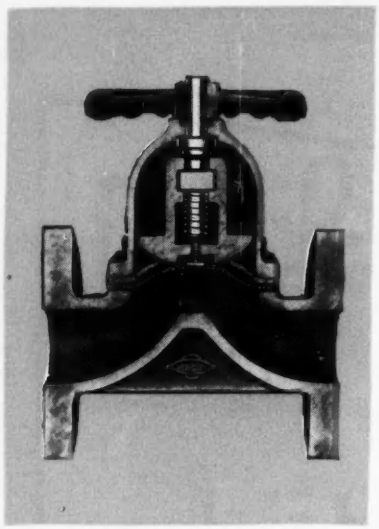

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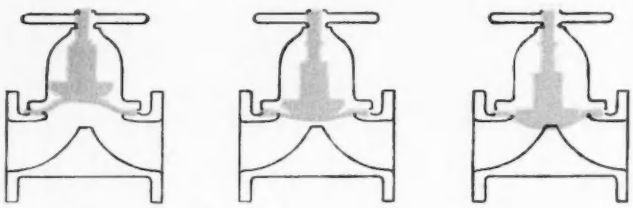

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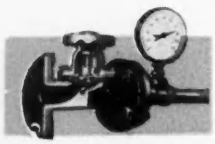

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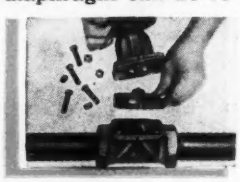

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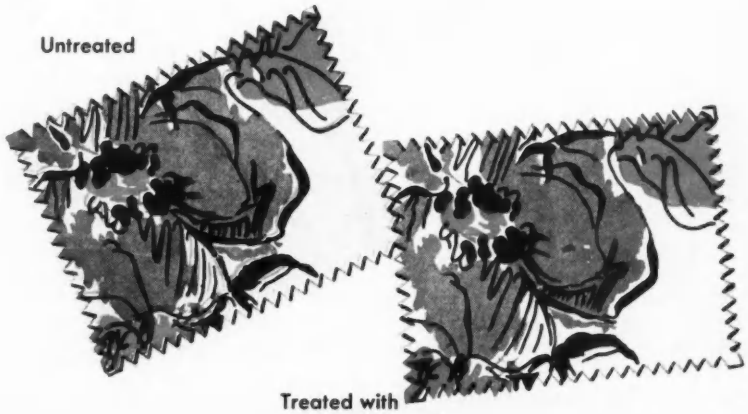

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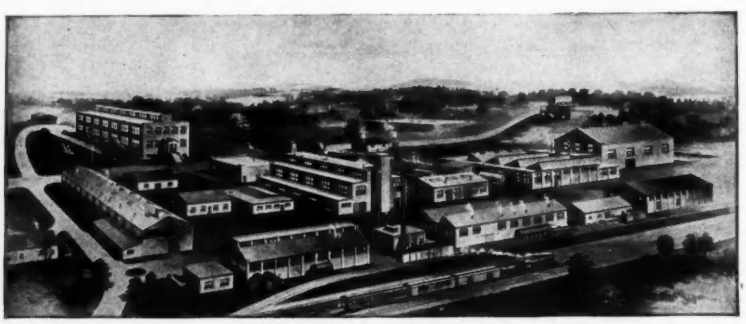

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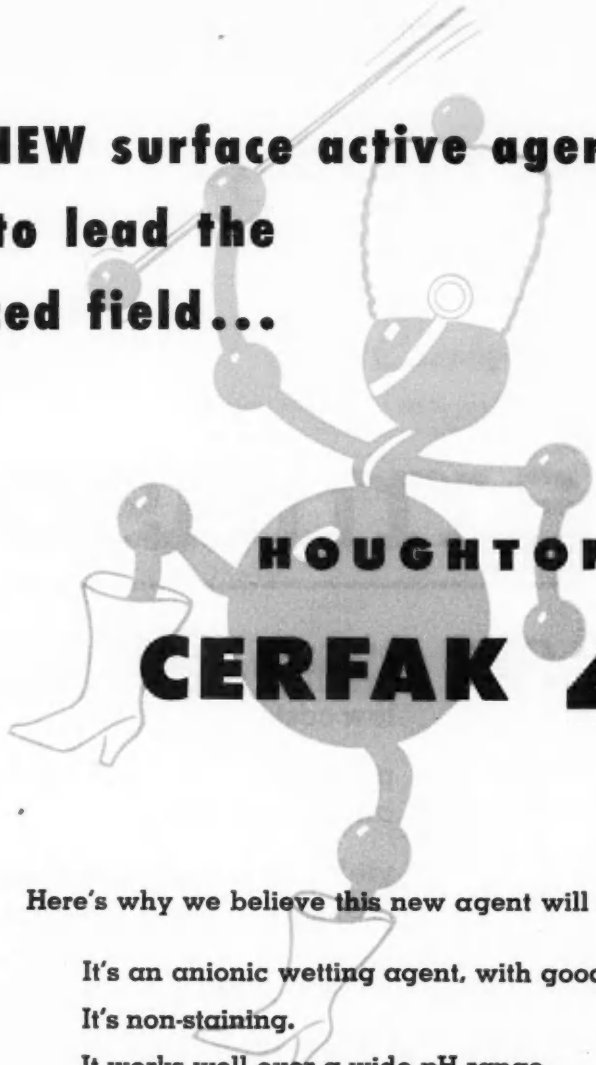

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JULY 10, 1950
VOLUME 39 NUMBER 14

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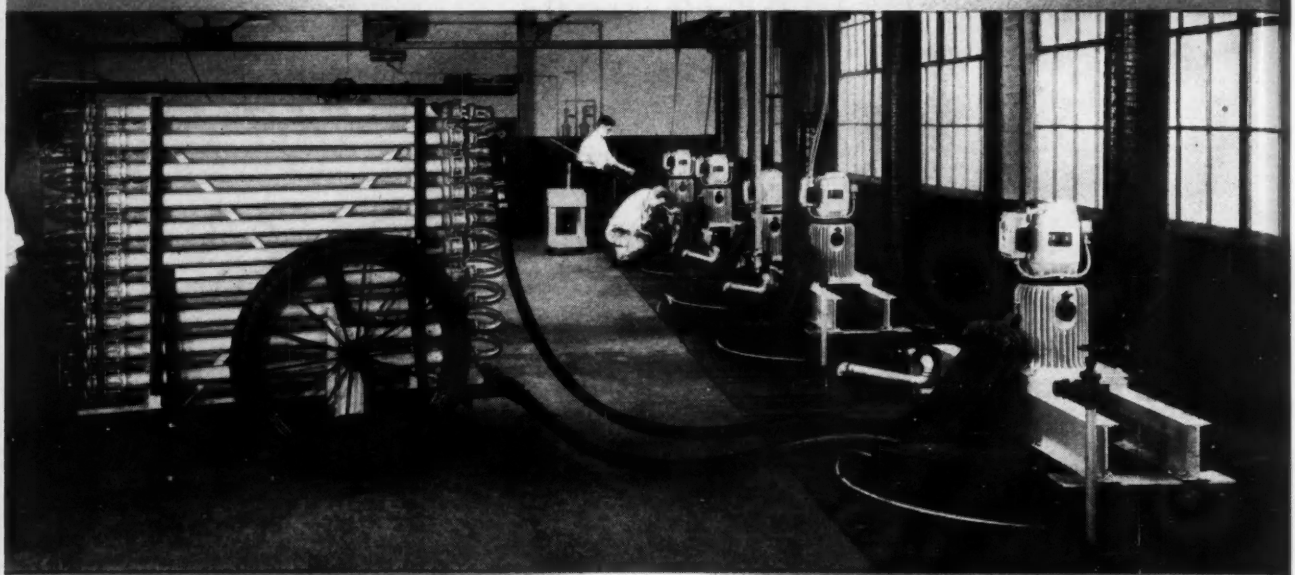

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DYESTUFF REPORTER

VOLUME 39 JULY 10, 1950 NUMBER 14

A METHOD OF EVALUATING PROTECTIVE COLLOIDS FOR VAT DYEING*

DR. PAUL WENGRAF
Arkansas Co., Inc.

Translated by

P. J. WOOD
Technical Director, Royce Chemical Company

THE usual methods of determining the protective colloid quality of various materials is so well known, that it is unnecessary to consider them in detail. It is sufficient to mention the work of Valko *(1)*, in which he explains the role of albuminous substances in textile operations. Probably the best known method is the determination of Zsigmondy's "Gold number", the higher the Gold number the lower the protective action. For vat dyeing, another particularly interesting method is the determination of the Congo Red number. This method was devised by Ostwald and depends on the fact that solutions of Congo Red are turned from deep red to blue by addition of electrolytes. An exhaustive explanation of this reaction is given by R. Haller in his article "Further Contributions to the Knowledge of Congo Red" *(2)*. In a very complete research, M. Baudoin *(3)* has determined the Congo Red number for a varied assortment of textile auxiliaries. The work gains considerably in value due to the fact that the protective action in solutions in which lime soaps were present were compared with that in solutions containing no calcium ions. From this tabular compilation, it can easily be seen that the high molecular ethers (Peregal type) have the best protective action. On the other hand, strangely enough, solvents such as pyridine act as protective colloids; in this case they have retarding effects as electrolytes. Obviously this is not in conformance with their behavior in dyeing procedure. To this writer, the explanation seems to be that the solvent, in the absence of calcium ions, prevents precipitation of the dyestuff. From this it can be concluded that the Congo Red number cannot be used as a measuring stick for all auxiliaries (or for all dyestuffs either).

The best colloid protective action is obtained by the use of gelatin and other types of glue, next come isinglass and casein and then gum arabic, sodium oleate, tragacanth, dextrin and starch follow at greater intervals. The main idea is to put the reduced dyestuff in a more suitable state of dispersion. In Valko's book, mentioned previously, he says "the substantivity of the leuco salts varies within wide limits . . . also just what goes on during dyeing and the mode of precipitation on the fiber are by no means clear, so that it is impossible to say with certainty in what form the oxidized dyestuff is developed within the pores of the fiber. . ." According to Valko it is possible that the dyestuff may be in a colloidal state or divided into coarser particles.

Further light is shed on this problem by published information on the nonionic textile auxiliary Peregal O, which, in this respect (and very likely other nonionic assistants of this group also), may be considered an ideal vat dyeing assistant. These findings are chiefly based on Valko's fundamental studies. Schwen *(4)* has shown that Peregal O, a condensation product of ethylene oxide and oleyl or other higher alcohols, therefore a water miscible ether, has stronger colloid protective action than glue or Dekol, a spent sulfite cellulose liquor derivative. A dyestuff which is very hard to dye level, such as Indanthrene Blue Green FFB, gives very level shades when dyed with addition of Peregal O, but the dyed color is much lighter. Schwen mentions a "braking action" ("retarding"-*Translator)* and gives a whole list of dyestuffs of the Indanthrene series which are strongly retarded, whereas other types are practically unaffected. To the latter group (very little retarded) belong Red Violet RRN and Scarlet GG; to the first group belong Yellow 5 GK, G and GF, Gold Orange G and 3 G, and Red Violet RRK. Schoeller *(5)* made two additional contributions. According to him, Peregal O has only the function of dispersing the leuco compound, therefore Peregal cannot of itself be considered as promoting exhaustion; the dyestuff does not exhaust better than when dyeing without such addition, which is in agreement with what has already been said. In the second statement, he explains why the exhaustion of the leuco dyestuff is so extraordinarily retarded. On addition of Peregal O, a heavy aggregation of dyestuff particles takes place; according to Valko, who measured the diffusion of the solutions through porous earthenware plates, the molecular weight of the particles is:

Without Peregal O.....	1,700
With Peregal O	220,000

Increased aggregation does not increase the activity of the dyestuff but decreases it. In other words, it retards the dyeing process, while addition of an ionizable agent has the opposite effect—by its salting out action exhaustion is accelerated. The Peregal O "attracts the dye particles to itself, and the dyestuff is then gradually released by the leveling agent". From this we may draw the conclusion that, for leveling vat dyestuffs, only those as-

* Reprinted from Textil-Rundschau, Sept. 1949.

sistants should be chosen which have no salting out action.

The practical vat dyer judges the condition of the dyebath by observing the speed of reoxidation of the reduced liquor on a glass plate dipped in the bath. It is obvious that this is not a scientific method of testing, but it does give an idea as to the course of the dyeing process. This cannot be said of the more exact measurements made either by determination of the Zsigmondy gold number or the Ostwald Congo Red number. These numbers have the disadvantage of having no direct correlation with the dyeing process, and particularly with the vat dyeing process.

EXPERIMENTAL

Tests made with both new and old colloid protective agents led to development of the following method, which can be considered at least as "half-way" quantitative, and which has the advantage that it parallels, to some extent, the procedure in vat dyeing. It consists of the determination of the quantity of an oxidizing solution required to reoxidize a given quantity of a Cibanone Yellow G vat (reduced color) back to the full yellow shade of the dyestuff, parallel tests being made both with and without addition of the colloid protective agent being tested. If the number of c.c.'s of the oxidizing solution required for the test is taken as *n*, and the number of c.c.'s required for the blank test is taken as *bl*, the quotient $\frac{n}{bl}$ in the case of a colloid protective agent is evidently greater than 1. This quotient will be designated as the "factor". Any compound giving off oxygen can be used as the oxidizing solution. According to our experiments, perborate seems to be the best material to use, although titrations can also be made with solutions of hydrogen peroxide, percarbonate, etc.

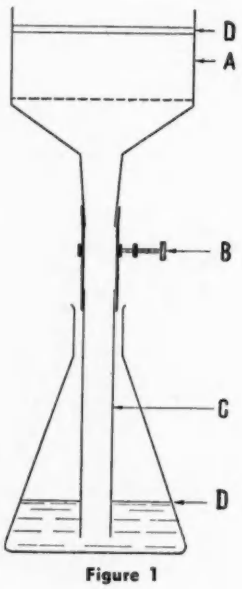

Figure 1

A. VAT DYE SOLUTION.—(0.25% Cibanone Yellow Extra Conc. Powder.)

1.25 g. Cibanone Yellow.
10.00 g. Alcohol.
5.00 g. Turkey Red oil.
25 c.c. NaOH 10% mixed together in 500 c.c. water, then
5.00 g. Sodium hydrosulfite is scattered into the bath.

The surface of the solution is protected from oxidation by covering it with a layer of pure, white mineral oil, preferably paraffin oil, which must be perfectly neutral.

After about two hours, during which the solution is gently shaken, the solution is ready for use. It is then filtered through a Buchner funnel (see Fig. 1) as follows: The Buchner funnel "A" is connected with a length of glass tubing "C" by means of a length of rubber tubing furnished with a pinch-cock "B"; the glass tubing is introduced into an Erlenmeyer flask. The lower end of this glass tubing extends into a layer of white mineral oil, so that, during the filtration, the filtrate is always covered by the mineral oil layer "D". A similar protective layer of oil is poured onto the surface of the liquor in the Buchner funnel. It is not good practice to use the vacuum pump for filtration. As the filtrate is practically entirely out of contact with air, the longer time required for filtration is not important.

An aliquot portion is withdrawn from the Erlenmeyer flask containing the filtrate with a pipette. The pipette should be closed with the finger when the tip passes through the mineral oil layer, and the outside of the pipette should be thoroughly wiped with filter paper before discharging the liquor into the titration flask. The solution should have a clear dark blue violet color; it should have no undissolved yellow or orange particles and no turbidity.

B. OXIDIZING SOLUTION.—

(a) *Perborate solution.* 5 g. sodium perborate are dissolved in distilled water in a 500 c.c. flask. Solution is effected by violent agitation without application of heat. This 1% solution should be kept cold until used.

Perborate solutions of such a low concentration as this begin to decompose at about 40°C. If possible, the flasks in which the titrations are carried out should be placed sidewise in a large container of ice cold water. It has been found that by keeping the perborate solutions in a cool place they lose strength quite slowly.

(b) *Hydrogen peroxide solution.* A 0.25% solution of hydrogen peroxide gives about the same oxidizing effect as a 1% perborate solution. Regular commercial hydrogen peroxide contains about 3% H_2O_2 20 c.c.'s of this commercial product, made up to 250 c.c. with distilled water. This diluted solution contains 8% of the original product and consequently 0.24% H_2O_2.

It might be supposed that hydrogen peroxide, since it is stabilized, would be preferred for titration. But it seems that just this stabilization causes a retardation in the rate of evolution of oxygen, which, no matter how slight it may be in the alkaline vat solution, is sufficient to make the end point somewhat indistinct. For a period of 20 to 30 minutes the strength of the perborate solution remains absolutely constant, and in that time two titrations (blank test and regular test) and control titration can be carried out. As we are not dealing with absolute numbers, but only the comparison between the blank test and the actual test, any small fluctuation in the oxygen concentration is not significant.

C. THE TITRATION.—As many 200 c.c. Erlenmeyer flasks as there are protective colloids to be tested are made ready, with an extra flask for the blank test. A mark is made on each flask at the 100 c.c. level. Into each flask is introduced 5 c.c. of a 1% solution of the protective colloid and made up to 100 c.c. with distilled water. The concentration of the colloid in the flask is then 0.05%. A layer of mineral oil is added, in the same way as in the filtration, to keep the solution from premature oxidation. Then 10 c.c. of the vat dye solution is added under the

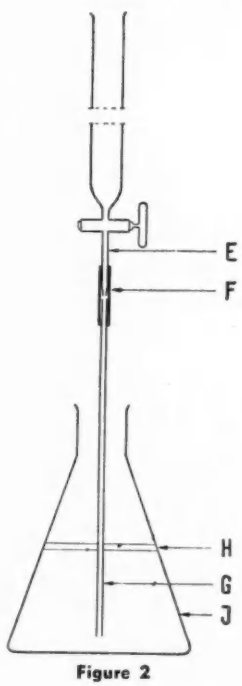

Figure 2

surface of the oil layer taking the same precautions as mentioned in section A.

In the meantime, the perborate or peroxide solution is poured into the burette. To the end of the burette a glass extension tube is attached by means of a piece of rubber tubing. The method of titration, which must be conducted without contact with the air, will be readily understood by reference to Fig. 2. (E, tip of burette; F, rubber tubing connection; G, glass tubing extension; H, layer of mineral oil; J, sample to be tested.)

The perborate or peroxide solution is run in first, 1 c.c. at a time. Then toward the end of the titration, it is added 0.5 or 0.2 c.c. each time. The dark blue violet solution first changes to a transparent red orange color which soon changes to a bright orange. The end point is easily recognized by the change from orange to a luminous bright yellow. (Comparison can be made with the blank test in case of doubt.) Some protective colloids having a solvent action on the intermediate products of the titration give from the start a deep brown orange coloration. This must not be confused with the end point, which is produced by the precipitation of the completely oxidized yellow vat dyestuff.

It should also be pointed out that it is best to dissolve the materials to be tested only a short time before the titration. Gelatin, glue, etc., are difficult to dissolve and precipitate on cooling. This can considerably influence the result, as many comparative tests have shown. The same thing can be said of many other commercial products.

Here is a short list showing the results obtained in testing various types of materials:

	Factor
Dispersed casein, solution pH 7	1.5-1.6
Water-soluble higher ether (Peregal type)	2.0-2.1
Gelatine solution	1.8
Glue solution	1.7-1.8
Polyglycol ester, water-soluble	1.5
Degraded protein product	1.2
Blank test	1.0

A certain significance attaches to these figures, as they agree, in the main, with accumulated experience of dyehouse operation.

CONCLUSION

The successful carrying out of the titration depends on the definite concentrations of the vat dye and the protective colloid solutions. This is explainable, as the scientific researches quoted at the outset show that the protective colloid goes into combination with the leuco compound only temporarily, and that, on this account, special conditions are required in order to catch this transition phase by means of a method of titration. While the writer does not wish to over-rate the importance of his findings, which are the result of many years of work, it is possible that a way has been indicated which may lead to a method of evaluating the working qualities of protective colloids.

This protective colloid action has a definite effect in the printing of vat dyestuffs, even though the question as to the role of printing thickeners has not yet been entirely explained. Thickeners are characterized as "thick" or "thin", "long" or "short". The practical man already knows the complexity of the problem of thickeners in vat color printing. So it would be well to investigate the action of protective colloids in printing. This writer will not make the error of paraphrasing the fundamental work of R. Haller *(6)*; but it is suggested that the foregoing method might be used to test conventional print thickeners to the end that it may be productive of more regular results. As a matter of fact, it has been established that the most suitable thickeners for vat printing have higher "factors" than less suitable thickeners.

The writer has tried to discover a volumetric method of estimating the value of colloid protective agents used with vat dyestuffs. This material is published with the hope that it may stimulate others to further studies on this question in the direction indicated.

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ABSTRACTS

Reclamation of Fibers

Textile Institute Conference, April 18, 1950

Dyer and Textile Printer **103**, 543-8, May 5, 1950.

INTRODUCTION (H. Hardy) — The speaker, in opening the Conference, reviewed the re-manufactured fibers industry and suggested the following factors for consideration:

(1) Substantial weights of mungo and shoddy are produced from mixed rags containing animal, vegetable and synthetic fibers. The main difficulty is that synthetic fibers usually show up in contrast in subsequent dyeing. To what extent can cross-dyeing in the piece be employed to secure commercially level results and obviate loss of weight by carbonizing or solvent processing?

(2) Is it an economic proposition to reclaim, e.g., nylon by the removal of the animal fiber portion from rags containing a relatively high percentage of nylon?

(3) Can improved methods of identification be developed to reduce present rag grading and sorting costs, bearing in mind the importance of the human factor?

(4) How best can we develop mechanical, physical and chemical treatments on sound economic lines?

(5) The relationship between the wealth of practical experience and craftsmanship, science, technology and the economics of the industry.

(6) The relative merits of virgin wool and reclaimed fibers.

RECLAMATION OF WOOD FIBERS (N. C. Gee)—The introduction of shoddy and mungo manufacture into an area devoted to woolen yarn and woolen cloth manufacture resulted in an association which has provided a wide range of fabrics at low prices. Various percentages of shoddy and mungo are used in cloths today. Many are 100 per cent shoddy, but mixtures of wool and shoddy are made in all proportions. The impression that many laymen have, that all shoddy cloths are low in quality and inferior, is far from correct. For warmth and weight, shoddy cloths are practically equal to virgin wool cloths, but they are not, of course, as strong, being shorter in fiber length.

The business of reclaiming wool fibers has resolved itself into a sectionalized industry and may be divided up as follows:

(a) the collection of rags, (b) rag sorting (c) carbonizing, shaking and washing, (d) stripping and re-dyeing, (e) rag pulling. All rags containing cotton need to be carbonized in order to destroy the cotton. Two methods are commonly used, (a) the dry method, using hydrochloric acid gas, (b) the wet method, using sulfuric acid. The former is the more popular because it is cheaper.

A considerable amount of stripping and re-dyeing is carried on. Compared with wool dyeing, rag dyeing is the more difficult because the material has been previously dyed and the dyer should know something of the types of dyes used on the various grades of rags presented to him. Stripping methods include the use of oxidizing agents (e.g., sodium bichromate and sulfuric acid) and reducing agents (e.g., hydrosulfite and sulfuric acid).

The speaker also discussed rag pulling, flock making and garnetting, and gave production figures indicating the importance of the industry today.

PRESENT AND FUTURE METHODS OF SEPARATING TEXTILE FIBERS (J. B. Speakman)—The speaker warned that he regarded the present situation in the industry as "critical", due to the quantities of synthetic fibers which are being encountered in wool mixtures (e.g., acetate and nylon), and the possibility of Ardil, Terylene and Vinyon in the near future. There are several lines of attack open, he said, none of which offers a final solution. The first great need is a ready means of identifying the different types of fibers when they are in the rags. Automatic separation of the different fibers is difficult and expensive. Cotton and viscose rayon are removed by carbonization, but there is still acetate or nylon to consider, and in wool-nylon mixtures the industry will want to recover both.

The speaker suggested various chemical methods for removing the synthetic fibers from wool, and also discussed the possibility of the use of solvents for extracting acetate and nylon, which could then be recovered.

DYEING OF PIECE GOODS MADE FROM RECLAIMED FIBERS (E. Smith)—The identity of fibers other than wool in sample pieces may be ascertained by the use of staining reagents if the reclaimed fibers have not been dyed previously; if they have, the tests tabulated in "Methods of Tests for Textiles" (B.S.I.) may be modified to establish the identity. The next step is a quantitative analysis; acetate rayon can be extracted with acetone, and nylon with cold concentrated formic acid.

The carbonizing of acetate rayon is dealt with in B. P. 589,104 and 626,801, but some doubt has been expressed as to whether the second of these methods is entirely satisfactory. If the percentage of acetate rayon remaining after carbonizing is small, it can be dyed with dispersed acetate dyes, but there are many difficulties.

Nylon-wool dyeing is dealt with in some detail. From investigations, the percentage of nylon present has no apparent effect on the depth of shade.

The speaker described the dyeing processes, and listed a number of acid and chrome dyes suitable for wool-nylon mixtures.

FINISHING OF FABRICS CONTAINING WOOL AND OTHER FIBERS (C. S. Whewell)—Blended fabrics will become more and more important. It follows that the textile wastes and reclaimed materials of the future will frequently contain large amounts of fibers other than wool, and recovery of the wool or of a single component will not be practicable. Even though methods of separating wool and man-made fibers from mixtures will undoubtedly improve so that it may be possible to remove the most undesirable components from blends, the problem facing the manufacturer and finisher will generally be to process fabrics made from mixed wastes.

Many blended fabrics may be scoured in exactly the same way as all-wool cloths, but if the nonwool component is degraded by alkali, a neutral scour should be employed. The shrinkage produced during the scouring decreases as the amount of synthetic fiber in the cloth increases. Also, in the case of woolen materials, the incorporation of Fibro or Rayolanda results in a reduction in shrinking power during milling. In general, wool-acetate and wool-nylon blends also shrink less readily in milling than all wool.

The speaker discussed the effect of the presence of synthetic fibers on the napping operation and in the production of unshrinkable fabrics, and stated that the standard urea-formaldehyde process for crease resistance is satisfactory for application to cloth containing a high percentage of rayon.—W.H.C.

The Standardization of Dyes

R. W. Shackleton, *J. Society of Dyers & Colourists* **66**, 221-4, April, 1950.

The dye famine experienced during the first world war left the impression that standardizing a dye was a process designed to mix the maximum amount of common salt with the minimum amount of dye, and that any grinding and mixing operation incidental to this process was merely to disguise the added salt. This conception is completely out of date.

The problems which arise in the standardizing of dyes and pigments fall into three classes:

1. *Physical.* If the dye is applied from solution, it must be free from insoluble matter, and particularly gritty substances. If dispersed, the particle size and stability of dispersion must be controlled.

2. *Chemical.* Few dyes are pure chemical compounds; e.g., Chlorazol Black E on analysis proves to be a mixture of at least six colored substances, plus salt and soda ash. Trouble is caused if the kind and amount of these "impurities" vary from batch to batch.

3. *Tinctorial.* The control of tinctorial properties is not merely a question of adjusting to a given shade and strength. Any shading must be done with due consideration of all the uses for which the dye is intended (e.g., leaving acetate or wool white).

The standardizing colorist is constantly seeking tests to reveal when a sample is different in some way from his standard. Instruments such as pH meters, colorimeters, spectrophotometers, etc., are providing not only a method of increasing the accuracy of strength estimations but also a means of assessing more fundamental properties.—W.H.C.

The Dyeing Properties of Wool Dyes

(Report of a Committee of the Society of Dyers and Colourists). *J. Society of Dyers & Colourists* **66**, 213-21, April, 1950.

The work of this committee has been largely concerned with the standardization of existing methods for determining the dyeing and migrating properties of acid dyes on wool.

The first part of the report comprises a group of five tests. Samples of wool serge are dyed with a given dye under controlled conditions with the following additions to the dye baths: sodium sulfate and sulfuric acid; sodium sulfate and formic acid; sodium sulfate and acetic acid; ammonium sulfate; and sodium sulfate alone. The degree of exhaustion of the five dyeings is determined either colorimerically or by means of exhaust dyeings.

In selecting the dyeing method most suitable for each dye, a degree of exhaustion of 90 per cent has been chosen arbitrarily. The method which achieves this with the least acidic conditions is the one chosen. The method using only sodium sulfate is for testing the suitability of acid dyes for union dyeing.

The second part of the report deals with a migration test. A sample of serge is dyed by the appropriate method with the dye to be tested, and at the end of an hour another sample of white serge is

(Concluded on Page 480)

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Mid-West Section—

CURRENT DEVELOPMENTS IN TEXTILE PROCESSING*

RAYMOND W. JACOBY
Ciba Company

With the return of a competitive textile market, the speaker exhorts his audience to use new developments in textile dyeing and finishing to improve quality and to decrease production costs and in that way to promote sales. The promotion of sales through lower prices based upon sacrifice of quality is deprecated. He runs through some of the newer developments in textiles, which include many new and durable finishes, some of which are dependent upon newer equipment and upon the use of newer chemicals, such as resins. New processing methods are discussed, including new methods of vat dyeing. The possibility of combining the rapidity of paper printing methods with new textile printing processes is suggested.

DURING and for some time after the war, there was no consideration for either cost or quality in textile materials. Now that we are back in a competitive market, everybody is trying to find something new and something different. As a result, there are all kinds of studies and research programs under way.

In this struggle for something new and something different, those of us who have been in the industry for any length of time feel that "there is nothing new under the sun," as the old saying goes. We can fully realize this fact only when we study the present textile situation and see the number of old ideas that are resurrected and put into use again.

In this resurrection of old ideas, it does not mean that there is a scarcity of ability or ingenuity in the industry. It simply means that we have new products, new processes, and new equipment which enable old ideas to be carried out on a much better scale than was possible heretofore.

Let us consider the simple process of calendering. This has always been a part of the finishing industry. We had plain calenders, chasing calenders, friction calenders, Schreiner calenders. moire calenders, and embossing calenders. Each produced a particular effect. However, in most cases these finishes disappeared the first time the goods became wet.

A few years ago, thermoplastic and thermosetting resins were developed. They were very soon applied to textiles. The thermosetting resins have a unique characteristic, which is described by saying that they "never forget." This means that, when such a resin is cured or set under certain conditions, it is prone to return to that condition. Cloth impregnated with such a resin, framed out smoothly, and then cured, tends to retain or return to this smooth condition. This is the basis of a wrinkle-resistant or a crush-resistant finish.

These resins also tend to retain the same dimensions. Cloth impregnated with such a resin, then dried and set at given dimensions, tends to retain these dimensions. This is the shrink-resistant finish, which, of course, is different from a preshrunk finish. In the latter case, the amount that a cloth normally shrinks is determined, and the cloth then mechanically given such a shrinkage.

A number of years ago in Switzerland a man named Raduner took out patents for the use of these resins in conjunction with various calender finishes. These patents were purchased by the Calico Printers Association in England, who also took out additional patents. The Apponaug Company obtained licenses to operate under these patents.

The John Bancroft & Sons Company obtained their patents on the Everglaze finish, which likewise uses the principle of subjecting resin-impregnated cloth to calendering effects. They have also purchased the C.P.A. and Raduner patents and issue licenses under these patents. At the present time there are thirty-three licensees in the United States and twenty-two in foreign countries. The Cranston Print Works has taken out patents along the same lines. Operating under these patents, these companies have developed many unique and attractive results.

The glazed finish, characteristic of "glazed chintz", has long been on the market. This finish is produced by friction calendering. When such a finish is applied to ordinary cloth, it disappears if the goods become wet. On the other hand, when the same effect is produced with the Bancroft Everglaze finish, which contains resin, the effect is permanent within the ordinary trade use of this word. Bancroft's requirements are that the goods must stand five washings according to the standard procedure of the American Institute of Laundering, but in practice they have stood up under twenty commercial launderings.

This sample in my hand demonstrates the difference in durability between the old finish and the resin finish. On this sample, thermosetting resin was printed in certain areas. The goods were then given the friction finish and cured so as to acquire an over-all, glazed-chintz appearance. However, when the goods were washed, the glaze disappeared where no resin was present. This sample therefore shows glazed portions in contrast with unglazed portions. On the table here are a wide variety of samples of the Everglaze finish. They have been produced by using all of the types of calenders mentioned previously. You are all familiar with a 96 x 100 lawn. Here is a sample of such a cloth with the ordinary finish. The rest of this group of samples are from the same cloth in a wide variety of finishes. I will not take time to describe them all, but you can examine them afterwards. I think that you will agree that it is hard to believe that many of them are a 96 x 100 lawn.

Here is another group of samples of the Plisselle finish of Apponaug. Again I will not take time to describe them all, but will show you first an 80 x 92 plain weave cloth which has become a piqué. And here is a basket-weave cloth. There is a wide variety of other effects, including Schreiner, figured Schreiner, and embossed. Here is a piece of 80 x 80 percale that now has the hand, feel, and scroop of silk taffeta. The requirements of the Plisselle finish are that the goods must withstand the following treatment: boiling in a soap solution for twenty minutes, drying, pressing with a steam iron, and repetition of the entire procedure for a total of five times.

Here are some unique results, which are a combination of printing and calendering. After the goods are printed with resins, they are embossed and cured. Where the resin is present, the embossing remains after the subsequent washing, but washes out from the rest of the goods. The resultant effect is an embossed and

* Presented before Mid-West Section in Chicago on Feb. 18, 1950.

colored figure on a plain ground.

These are samples of the Cranston finish, which is a combination of plissé and luster. By this method, a variety of effects can be obtained.

You will probably be interested in this sample, which is a rayon plissé produced in the same way.

Another old idea is that of vat dyeing. It goes back through the centuries—in fact, to the origin of dyeing itself. Centuries ago natural indigo was a major article of commerce. The name "vat color" comes from the old process of steeping indigo in a tub, or vat, where fermentation took place resulting in the reduction of the indigo.

The principle of vat dyeing is comparatively simple. Vat colors in their normal state are insoluble. Under the action of a reducing agent and alkali, they are reduced to their leuco state, in which condition they are soluble and can be absorbed by fibers. They are then oxidized, whereupon they return to their insoluble form to become extremely fast.

I made a survey last week in anticipation of this talk, and found at the present time twelve different methods of application of vat dyes in use. Of these, three are comparatively new developments. One method makes use of the Williams Unit, with which you are all probably familiar. It is, in a sense, a modification of the open soaper. The second process I want to comment about is the pad-steam method, wherein the fabric is padded through the color, then through caustic and hydrosulfite and into a steamer. The results obtained by this process are excellent and cover wide varieties of shades. Here are a group of shades applied by the pad-steam process. They all happen to be on rayon, but this method is used also for cotton.

The most recent and, to me, the most interesting vat application is what is known as the "vat-acid process." In this method the vat dyestuff is reduced in the usual manner. A dispersing agent is added either before or after reduction. When reduction is completed, acetic acid is added to bring the pH of the solution between 4.0 and 5.0. This causes the precipitation of the vat acid as a very fine dispersion.

There are three advantages for this method. In the first place, the dispersion is very fine—infinitely finer than any vat-pigment particle. Secondly, this dispersion is very stable. Thirdly, it has no affinity for the cloth. In the application of vat-acid pigment, there is no difficulty from exhaustion of pad liquor, or from variation in affinity of different yarns or various portions of the goods. Many fabrics that are difficult to dye by other methods are done satisfactorily by the vat-acid process. After going through the vat-acid dispersion, the goods pass through a solution of caustic soda and hydrosulfite, and then into a steamer. An alternative method is to treat the padded goods with caustic soda and hydrosulfite on a jig.

I do not know whether you have ever tried to dye high-count combed broadcloth or not. If you have, you probably know about the trouble with warp streaks and other difficulties. Here are a few samples of high-count broadcloth dyed by the vat-acid process. The process is used on a wide variety of shades running up to as high as class four in the vat-color classification. This group was all done by the continuous method. Here are high-count broadcloths, poplins, and balloon cloths, which I think any of you who have tried to dye will agree are some of the most difficult fabrics.

The heavier shades are produced by padding with the vat-acid dispersion, followed by development with caustic soda and hydrosulfite on jigs. You can see that some of the shades are very dark. If you will examine these samples afterwards, you will agree that they illustrate an excellent dyeing job.

Some spun-rayon cloths are difficult to dye with vat colors. Here are some samples of spun rayon dyed by the continuous vat-acid process. They represent a splendid job, but you will have to look at all of these samples close at hand to appreciate the excellency of the work.

There is another development that has received much publicity lately, namely, the Vat Craft process. It is another example of an old idea being brought up to date. As you know, there are certain colors that are sensitive to light—that is, they can be developed by light. This print was made in that way. The goods are impregnated with an Indigosol color. While still wet, they are passed around a quartz cylinder, about which a photographic film has been fastened, and on the inside of which a mercury light is placed. The light passing through the film develops the Indigosol color. The goods are washed immediately to remove any undeveloped color. This process has been carried on commercially. One disadvantage is that the process is very slow. With a cylinder a yard in circumference, as it takes a minute to develop, the production is only one yard a minute.

The Vat Craft process greatly expands this old idea. The developers of this process claim that by the use of a catalyst, leuco compounds that are not ordinarily very light sensitive, can be developed with light. Furthermore, the speed of development is increased so that it takes place in a few seconds. The Vat Craft equipment consists of two pads, a light chamber, and a washer. In the first pad the leuco color is applied, and in the second there is the catalyst, and then the cloth passes into the light chamber. In this chamber there is a battery of lights totalling 112,000 watts. The goods are in the chamber for only a few seconds for development of the color. As I have said, there has been a great deal of publicity of this process, and it may have possibilities.

Here is a sample of another development, which is the reverse of the previous one. In this process the goods are first impregnated with a naphthol, which is light sensitive. The light tends to destroy the naphthol. After exposure, the goods are padded through a solution of a diazotized base, which couples with the remaining naphthol.

Another very old idea is fluorescence. Fluorescence is the property of absorbing invisible ultraviolet rays and other rays and of their re-emission at a different wave length. This is a phase of the Switzer Patent. Perhaps you saw the publicity in the *Saturday Evening Post* about these fluorescent colors on various fabrics. Here are some of the samples. These dyestuffs themselves are fluorescent. They take invisible light and convert it into wave lengths in the visible spectrum. From these fabrics we have the reflectance of visible light as we do with any dyed goods, plus the re-emission of invisible light at wave lengths within the visible range. This accounts for the extreme brilliance of the colors.

Fluorescence is the basis of what is known as "optical bleach," in which certain colorless materials are used that have this property of converting ultraviolet light into visible light. These materials convert the ultraviolet light into visible blue light, which has a bluing effect. Here are samples of cotton, wool, and rayon that have been impregnated with such material. By re-emitting otherwise invisible rays in the visible portion of the spectrum, they make the goods appear whiter.

This afternoon we had a very interesting movie on copper aftertreatment. This is an old idea and it was indicated in the picture that certain colors have been brought out that respond particularly well to this treatment. Also, new compounds have been developed, which yield much better results than the copper salts used previously. One very important point indicated in the picture but not stressed was that in a dye house the producing unit is the dye machine. There is no use preparing any more goods than the dye machine turns out; therefore, it is important to get as much production as possible from the dye machines. As was shown this afternoon, when the aftertreating material is applied in conjunction

with a resin finish, extreme fastness is obtained. Many of these fabrics would normally receive a resin finish; hence, no additional handling is introduced by this method. The goods are dyed the same as with any direct color. They are then removed from the dyeing machine and given the aftertreatment in the finishing process. This eliminates the time which would be required for diazotizing and developing necessary when developed colors are used, and thus gives time for additional dye-house production.

Here is a little freak proposition that I just brought along. Some of the colors of this new type have a peculiar affinity for spun glass. We cannot explain it, but just padding some of those colors on spun glass gives a very excellent result. We do know that spun glass carries a negative charge. I have had many conferences with the Owens-Corning Company on this point in trying to find what there was in the dyestuff construction that caused it to fasten on. It is a very selective process, but there are a number of those colors which do fasten on spun glass very well. It is just a happenstance but an interesting little point.

In the woolen and worsted field, the matter of shrinkage control is becoming more and more important. Two methods are followed. The first method consists of the application of a resin finish, which stabilizes the fabric. I have here a sample of tubular knit jersey to which a resin finish has been applied. After five AATCC launderings this jersey shrank only five per cent in either direction. That is an excellent result.

The other method of stabilization for wool is a chemical process, which chemically alters the wool so that it does not felt or shrink. There are a number of these chemical processes in commercial operation, producing excellent results. This particular sample I have here is treated and this one is not treated. They were given the same washing. If I hold them up you can see the tremendous difference in size. The untreated piece shrank 36 per cent in total area and the treated piece shrank 2 per cent. Both the chemical and the resin treatments are coming into more general use and are of great benefit to the woolen and worsted industries.

In the East—I do not know how it has been out here—there has been a great increase in the use of premetallized dyes because of the large increase in the carbonizing of piece goods. The mills in the East attribute this increase in piece-goods carbonizing to three factors: (1) It is more advantageous and economical to carbonize in the piece than in stock. (2) They want to get away from speck dyeing. (3) They find that even the mills that have been doing high-grade worsted have to cabonize today where they did not do so before. On carbonized goods the premetallized dyes have two advantages: (1) They do not have to be neutralized, and (2) there is less chance of unevenness. For these reasons this type of dye is becoming increasingly more important.

Now I come to another phase of my discourse. If anybody has any aspirin tablets, they had better take them now because I think the kind of dyeing I shall take up at this point is going to give us more headaches than anything else. I refer to the question of dyeing nylon and nylon mixtures. As you probably know, the addition of one per cent of nylon to wool increases the strength four per cent, and the effect of more is cumulative. In other words, if 25 per cent of spun nylon is added to wool the strength of the yarn increases 100 per cent. We know nylon can be dyed very readily with acetate colors, but many acetate colors have neither good light nor good wash fastness on nylon. There are a number of acid, chrome, direct, and neutral dyeing acid colors that dye well on nylon. However, they all have what is called a saturation point, that is, one color may exhaust well only up to a half per cent and another up to two per cent and still another up to three per cent. Many theories and formulas have been worked out to show how you can mix together different dyestuffs of different saturation points to get a required result. But after you have worked out a nice formula, you will find it does not work in practice; in mixtures, some color with a high saturation point begins to block out at a very low level. By "blocking out" I mean that one color will not go on in the proportion that it occurs in the formula. For instance, if you are dyeing other fibers and want to make up a green with a mixture of yellow and blue, and put in twice as much of each dyestuff in one case as compared with another, you would still get a green of the same hue, but it would be twice as dark a shade. When you try to do that with mixtures of acid, neutral-dyeing acid, chrome, or direct colors, you find that that is not the case. If you double the amount of dyestuff you may get an entirely different shade.

I have three skeins here that are dyed with the same mixtures. This one was dyed with a mixture of three colors which we know dye nylon very well. It is a golden brown. Then we doubled the amount of dyestuff. We should expect to get the same hue except it should be twice as dark, but we are getting over on to the olive side. We applied three times as much dyestuff; we no longer have a golden brown, but we have a real olive. That is one of the things that keeps happening with these combinations.

Here are some socks made of a mixture of wool and nylon, which are dyed with neutral-dyeing acid colors in the presence of ammonium sulfate. They dyed up very evenly.

I have another outstanding example. Here are three colors which dye nylon excellently, with very good light and wash fastness. They also dye wool very satisfactorily. These skeins contain half nylon and half wool, that is, they are made up of half a skein of nylon and half a skein of wool. These three individual colors dye both fibers very well. The blue shows a slight difference on the two fibers, but with the other two colors, it is hard to tell which is the nylon and which is the wool. We put those three colors in the formula to get this shade of brown, and we put in half a skein of nylon and half a skein of wool. The wool came out brown and the nylon came out blue.

Every shade and every depth of dyeing is a job unto itself. You can readily appreciate how difficult it is for a dyer to shade goods under these conditions. A patch may indicate that a certain dye should be added, but the fact may be that enough of that dye is already in the dyebath; it does not go onto the nylon because its saturation point has been reached.

Here is another new development, the nonwoven fabrics. You probably have all seen towels and napkins that illustrate this type of construction. The Lustron Corporation has now started marketing nonwoven drapery fabrics. This white ground pattern is an example of a nonwoven construction. These nonwoven fabrics are made with card-lapping, pressed together and printed with a resin to act as a binder. This particular drapery is made from rayon fibers, printed with colors of excellent light fastness, made fire retardant, and hemmed top and bottom ready for hanging. They retail for less than two dollars a pair, a price that makes draperies a simple problem for every home. They are soft and drape very nicely. They certainly will provide keen competition for some woven goods. Here is a blotch pattern, 100 percent covered, which is very beautiful.

Let us now consider another phase of textile processing, namely printing. It seems unusual to me that textile printing and paper printing—while they have a lot in common—are so very far apart. On the train coming out here, in the diner, I happened to sit across from a man who was in the printing business. His company prints part of the issue of *Life* magazine. I asked him how much a machine would print, and he said that depends upon the size of the issue. One machine prints 30 to 40 thousand cop-

ies an hour. In terms of yardage, that is certainly a lot of printing.

Paper-printing machines are designed to print paper and paper printers do not have the equipment to fix colors as do the textile printers. However, here are some samples of cloth which were actually printed on a paper machine. Here is a big blotch pattern, which is an excellent job. Such prints, printed with ordinary printing ink, are already on the market. They are not durable, and they crock badly. If they would embody this idea with another one which I am going to speak about, it seems to me there would be a lot of possibilities in that field.

I do not know how many of you are familiar with conventional textile printing methods, but the general procedure is to print a paste containing vat pigment, alkali and a stabilized hydrosulfite, called sodium formaldehyde sulfoxylate. The color is reduced and absorbed by the cloth in an aging process. However, this has the drawback that goods after printing must be aged very soon or the stabilized hydrosulfite decomposes and the goods are spoiled. The result is that if you print all day Friday the agers have to run well into the weekend with pay figured at time and a half for labor, making it an expensive proposition.

A number of years ago in Germany the Colloresine process was developed. That has been revived in this country under the name of the Cellapret process.

That process is in actual use today in the textile printing industry. I think the results are very excellent. The pigment is printed on the goods and they are then padded through a solution of caustic and ordinary hydrosulfite, and then aged immediately. This process has the advantage that the goods can be around indefinitely after printing. This is of particular interest to screen printers who have only a small yardage of goods to be aged. They would not have to run their ager as frequently as they do when printing by the conventional method. This has another advantage that the aging time under these conditions is only ten to fifteen seconds.

Here is a print which I selected because of the large amount of fine detail. You realize that in a print the color must not spew out. All edges of patterns must be very sharp. The thickener used in this process coagulates when it enters the chemical pad solution. If you look at this patch carefully you will see that all outlines are sharp. Here is an all-over blotch pattern in which all the detail is excellent, and the blotch very smooth.

Another feature of this method is the time of aging. In conventional printing the time of aging varies from four to eight minutes. Suppose you want to have the goods produced at the rate of forty yards a minute and age them five minutes. That would require an ager that holds 200 yards of goods. This would be a very large ager, expensive to construct and a shallow chamber 8 yards long. It would require many rollers at top and bottom, with the face of the print touching alternate rollers.

By this other method let us assume that 12 seconds of aging time is sufficient, or one-fifth of a minute. If a production of 40 yards per minute is desired, the ager need hold only one-fifth of 40, or 8 yards. Such a short yardage could be held in a shallow chamber 8 feet long. It would have the added advantage that the face of the goods would never touch a roller. It would seem to me that this Cellapret printing process could be combined with the idea of printing textiles on paper-printing machines to open up vast new possibilities in rapid textile printing.

There is another possibility of this pad-steam process. The time of passage in the steamer is very short and dyeing takes place in a matter of seconds. As a result of that, there has been a development of vat-dyed and vat-printed goods wherein the vat dyeing is done so quickly that it does not affect the print shade. Here is a sample selected especially to demonstrate the point. It is an orange print on a grey ground with both colors very clear and bright. You can appreciate how the grey would dull the orange by other dyeing methods. It is a 100 per cent vat-color job. It is an example of vat colors on vat grounds made possible by the very short time required to dye by the pad-steam method.

The textile business has always been a feast or a famine. In the old days, when a famine was upon the textile business, an effort was made to cut cost by reducing quality and thus to increase sales. Shorter-staple cotton was employed, or carded yarns instead of combed yarns; a few ends and picks were taken out of the cloth; and corners were cut in finishing. The result was that the consumer got an inferior piece of merchandise.

Today we are trying to give the customer something better in order to get business, and we are trying to produce something better than the other fellow does. It is a situation of which we can all be proud. However, there is an old saying that pride goeth before a fall; nothing would be more disastrous than to sit back in glory and to take pride in the accomplishments of the industry. It should be a spur or incentive to achieve still greater accomplishments. In other words, let us be both proud and progressive!

Top Students Win R. I. Awards

STUDENTS from three New England textile schools have been presented with annual awards of the Rhode Island Section for having the highest marks in dyeing and chemistry at their respective schools.

The award winners are: Roland R. Brassard, Rhode Island School of Design; Donald Tweedy, Bradford Durfee Technical Institute and J. Raymond Nisbet, New Bedford Textile Institute.

CALENDAR

COUNCIL

Meetings: Sept. 28-30 (Portsmouth, N. H. Convention) Nov. 17 (New York).

NATIONAL CONVENTIONS

1950: September 28 to 30, Portsmouth, N. H.
1951: October 18 to 20, Statler, New York.
1952: Boston.

HUDSON-MOHAWK SECTION

Meetings: Sept. 15 (Albany), Oct. 20 (Utica), Dec. 8 (Albany), Jan. 19, 1951 (Albany), Mar. 16, 1951 (Albany), May 11, 1951 (Albany), June 22, 1951 (Annual Outing).

MID-WEST SECTION

Meeting: October 28 (Chicago, Ill.).

NEW YORK SECTION

Meetings: October 30 (Swiss Chalet, Rochelle Park, N. J.), November 17 (Swiss Chalet), Jan. 12, 1951 (Hotel New Yorker), Feb. 23, 1951 (Hotel New Yorker), March 30, 1951 (Swiss Chalet), May 4, 1951 (Swiss Chalet), June 15, 1951 (Outing).

PHILADELPHIA SECTION

Meetings: October 28 (Meeting-in-Miniature, Philadelphia Textile Institute), December 8, January 17, 1951.

PIEDMONT SECTION

Meeting: October 28 (Charlotte, N. C.)

RESEARCH COMMITTEE

Meetings: Sept. (Portsmouth, N. H., Convention), Nov. 17 (New York).

RHODE ISLAND SECTION

Meetings: October 27 (Providence Engineering Society Hall), November 17 (Johnson's Commodore Room).

SOUTH CENTRAL SECTION

Meetings: August 18-19 (Summer Outing—Read House—Hotel Patten, Chattanooga Country Club—Chattanooga, Tenn.), Nov. 4 (Hotel Patten, Chattanooga, Tenn.).

SOUTHEASTERN SECTION

Meetings: September 23 (LaGrange, Ga.), December 9 (Atlanta, Ga.).

New York Section—

AATCC RESEARCH AND THE LIFE OF MR. JAY BOX*

J. ROBERT BONNAR
Chairman of Executive Committee on Research and Chairman of General Research Committee for AATCC and Technical Director of General Dyestuff Corporation

The Chairman of the Executive Committee on Research relates how the Committee manages AATCC research activities. He describes how new problems come to the Association and how wheels are set into motion to solve those problems. The Executive Committee on Research must not only co-ordinate the work of the paid AATCC Research Staff at the headquarters in Lowell, but it must see that volunteer committees do not flag in carrying out the major part of the activities of the Association. These endeavors culminate in standard methods of testing that are useful to the whole textile industry.

In the second half of his talk the speaker tells how the Association can carry out part of its Constitutional objectives to bring information to its membership by a new activity, which has already received considerable discussion. The plan is to publish textbooks especially written from a sound theoretical and practical point of view to help Mr. Jay Box, a young textile chemist or colorist, to improve himself in his chosen field with benefit to himself and to the industry.

AATCC Research has been going on now for many years, and, whereas you are all familiar with various individual phases of the work, it might be well for a minute to explain some of the principles which are the basis for work being undertaken. The Executive Committee on Research obtains requests for work as well as suggestions for thought in various ways. These come through presently active committees, reference committees, general membership, outside organizations, individual companies, etc. The Executive Committee on Research then studies any suggested problem from the standpoint of its importance, breaking it down into either broad problems of general interest to the industry as a whole or narrow problems, which are helpful only to a small segment of our membership and/or the industry. This does not mean that a problem narrow in scope and of importance to only a few people will be ignored, but these phases must be taken into account in the next steps of thought of the committee. As good an estimate as possible, or guess if you will, is made as to whether or not it is a long- or short-range problem, and, concurrent with this, is the thought as to whether or not the investigation can be carried out with little or no expense to the Association, or whether or not it involves a considerable investment in time and/or material.

After these conditions have been studied and it has been decided that the problem is one that should be rightfully undertaken by your Association, the proper approach as to who will do the job then has to be thought out. There are several ways of doing this, namely, through the use of a present committee, if the problem lies within the purview of that committee, or by reactivating a reference committee whose past experience may serve as a valuable background for the new investigation. In addition to these two methods there has to be considered the thought of forming a new committee, of doing the work at Lowell, or of asking one of the Sectional Advisory Research Committees to undertake it. Should it be a new committee that has to be formed, the nature of the problem then automatically answers the question as to whether the new committee should be formed of members all in one locality, as perhaps a wool problem which could probably be centered in New England, or whether it be a new committee formed with a cross section of members not located centrally geographically, such as for instance, being one on crocking, which is of importance to the entire membership.

I will not bore you with restating how past problems, such as the OD No. 7 report for the Quartermaster, the Salt Project, C.W.S. Project, Committees on Light Fastness, Wash Fastness, etc., have been set up. I would, however, like to point out several phases which may not strike you in your general activity in the Association, if you are not as closely connected with some of these various functions as a few of us. It is very easy for individuals, and occasionally we do get complaint letters, to complain of some phase of a particular test which is not exactly right according to their way of thinking. We take these letters seriously, and forward them to the committees in question. On the other hand, we want you to realize that the work that has been done has been very important work in the industry, and you mill processors, chemists, trouble shooters, and all the way down as far as consumers, would not have the specifications, consistency of deliveries, and high quality of standards that you now have if it were not for the work that AATCC has done, unless, of course, if it had been done by someone else. Several of us in my company sat with representatives of one of the largest processors in the country the other day talking over application research, quality, reducing costs, and the like, and the conversation just could not have been carried on if we could not have talked about 40 or 60 hours of light fastness, so many units of gas fading, and such things. It seems to me that, although we strive for ideal conditions in these test methods, what we have is very satisfactory, and we lose sight of this in our individual complaints. It is like being told that a picture has been painted using the best quality of paints available, the shortest time to do the job, and with the utmost degree of art in blending the paints, but if we do not stand back far enough for the right perspective at the correct vantage point, it means nothing. This, to me, is the way we should view the tremendous amount of work in the past years that AATCC has accomplished for you. If we talk about a pound or a peck of peas, we are satisfied that the housewife knows how many to get to serve a meal for six or eight people; but of course she does not know exactly the weight of the pod as against the peas. By the same token we love to tell someone that we get so many miles per gallon out of our car, but actually this depends upon the number of stops, the

* Paper presented before New York Section in New York on March 3, 1950.

speed at which we run, the temperature of the day, the number of hills and the like. What I am trying to get across to you is the fact that many of the standards of measurement that we use with all the faith in the world have at least one variable which makes the standard imperfect, yet it is used in every-day life. So do the variables in some of our AATCC standards about which we have serious complaint, and yet in spite of this, they are of tremendous service and value to the industry.

I would mention here that the test methods, as you know, up until about two years ago, were written in a format according to the whim and liking of the committee setting the test method up, or even in most cases by the chairman of that committee. The formation of the Nomenclature and Classification Committee practically entirely eliminated any confusion on this score and yet with this very important change, one or two strong complaints have been received which were, after all, very minor.

We, furthermore, have such problems to delve into which have more to do with sensation and psychology and are almost beyond setting up in terminology of numbers. A particularly good example of this is a test method for drape, which of course comes far from being easy to set up and cannot be resolved into a terminology using numbers, such as, for instance, breaking strength in pounds per square inch.

There are also many problems of which your Association is cognizant, that have to be solved in the future. I do not hesitate to admit this as I know you will have faith that the Association will tackle them as soon as possible.

The AATCC being mainly a voluntary organization as far as the work of the various committees is concerned, the Executive Committee on Research has been disinclined to replace nonworkers on a committee, especially an ineffective committee chairman. The supervision of work simply cannot be so stringent for volunteers as for paid help.

The reports of the various committees are by-and-large only a resume of the results obtained or, in too many instances, merely a write-up of the proposed test method. This should not be. There is no doubt that, for matters of background, information to those interested, and basis on which the General Research Committee can accept the test method, more complete reports written in a business-like official way should be submitted by an individual research committee. It has for some time been our endeavor to have each and every research committee appoint a secretary so that proper correspondence, checking of attendance, and interim reports would be readily available. This part of our policy has worked fairly well, but another part has not been heeded. I refer here to the training of one or more possible candidates from the committee itself to replace the present chairman at the end of his legal three-year term as set up by the Bylaws.

One very important function of fastness committees which we have had as a goal for some time has been only partially successful. This is the matter of following up our test methods for end use or consumer performance. This is a very hard nut to crack and the Wash Fastness Committee, for instance, has been working on it for several years and, although coming closer with many data, has not come up with the final answer. It must be realized that this is not something which the committee itself can do within its own ranks and within its own laboratories, but it must look to outside groups and organizations for help. These outside sources do not always function as rapidly as we would like to see them, and there is no way at hand to get certain types of factual information.

The Executive Committee on Research has recently hoped to broaden out the work from Lowell, the AATCC National Research Headquarters, to other schools through fellowships or volunteer work headed up by Sectional Advisory Research Committees. This has started in a small way but has not gathered the momentum we would like to see.

One extremely bad change that has taken place is that test methods being set up as well as all types of work being carried on are not discussed at any length at the General Research Committee meetings any more. This is bad, because many valuable contributions used to be made during the "hashing over" of problems at the General Research Committee meetings. This change was, no doubt, due to the times, as in war years everyone was too busy to attend many meetings or to sit through many details. It has also been brought about by the fact that anywhere from six to fifteen items are now discussed at each General Research Committee meeting in counter-distinction to the two or three which used to be talked over in considerable detail. To do the job really well and to discuss all problems as they should be discussed would probably take a General Research Committee meeting of two-day duration every two months.

Despite the fact that the Executive Committee on Research has had very fine cooperation from Sectional Advisory Research Committee chairmen with respect to suggested names for expected committees, there is still too much use of Charley Dorn, Herman Hager, Leonard Little, Bill Cady, Bill Appel, Hugh Christisen, John Dalton, and work-horses such as these who have carried the load for a good many years. I risk criticism in naming only a few, but you know the rest of the names that could be added to these I have mentioned.

And now you say, "O.K., you know the faults; you have named them; you're the Chairman of the Executive Committee on Reserach and the General Research Committee, why don't you do something about it?" Well, you are correct in a way, and yet you must realize that my employer as well as the employers of many of the others who have put much time into the AATCC have been over-generous in allowing us to carry on as we have, most of us for the last twenty years or more. We are, however, attempting to correct this situation. You have already heard, or will shortly hear, that the Council voted to accept the recommendation that the Executive Committee on Research be enlarged 100% with respect to the appointed members. It is expected that this larger Executive Committee on Research can move in on some of these problems by allocating certain committees and activities to a single member, his prime responsibility will be to see to it that progress is made as fast as possible.

And now, I presume, you have been wondering what the second half of the title of my talk means. In this second half I will try to give you a few points of my own with respect to something else that the Association can do to live up to its objectives as set down at the formation of the Association. There will shortly be a committee or committees formed to investigate the possibilities of setting up simple text books for the use of people in the wet processing industry who have not had the advantage of education beyond the high school level, or sometimes not even that. This was suggested some time ago, and, to my mind, was one of the best-founded suggestions we have had. I visualize that this idea can be expanded very readily and to great advantage by working on a co-operative basis with textile schools and other schools of higher education so that the man in the mill will be able to assist the schools in not only teaching chemistry, mathematics, engineering, etc., but some of the more specialized types of mathematics and chemistry pertaining to the textile wet-processing field. Thus, the individual himself, as well as his employer, will be helped, and this will make for a more efficient organization.

And now, let us look further into the future; I assure you that this is my own idea and you can mull it over as you will. I would like to talk about Mr. Jay Box who has just graduated from any school, especially a textile or technical school.

Mr. Jay Box has gotten himself a job because he had high marks, or because help was particularly short and they took what they got, or because he had a nice personality, or because he had an "in" with the vice-president. I would say that Jay Box was lucky to get this job but has to have more than luck to hold it, or at least to advance and better himself so that he and his family feel that he is a success in life. He comes out of school so full of molecular weights, complicated formulas for salting out effects, ionization constants, and wonderment as to how he is going to use his heat-of-solution studies that he tries to use some of these complicated studies in solving simple mill problems. Mr. Jay Box has to learn the rudiments of what types of chemicals to use in wet processing for neutralization, how to talk about pounds per hundred gallons, yards per minute, and percents of dyestuffs where mixtures are involved, how to get iron and oil spots out and how to do the many things we have all met in the mill.

And now, how does Jay go about getting this information in the quickest and best way? It seems to me that someone could well write a short book on the things that Jay should think about as he carries on his duties in his first job. His conduct in the first weeks give not only his employer but his fellow workmen their first impression of him. He should in the first place be led to understand that his vast knowledge is nothing but a tool to help him think correctly and to know how to go about getting an answer to the problem at hand. Jay should not, as many recent graduates do, try to impress his boss and fellow workmen with the fact that he has the latest information and should therefore be looked up to. Many of these things I will talk about he should know already, but to be jolted into them by reading them all at one time will be very good for him. I am very serious about this, because they are impressions gathered over a period of ten to fifteen years in interviewing and hiring many lads just like Jay, directly from school. To my mind, he must learn that his appearance means very much in his acceptance. This does not mean that he has to have a $125 tailored suit and expensive wool socks; but even old shoes look good when they are rubbed up; a necktie slightly frayed is not nearly as conspicuous when tied neatly; and frayed cuffs of a shirt are very seldom taken into account if the shirt is clean. He particularly should watch such things as dirty finger nails, etc. He likewise does not think much of it perhaps when he comes in just a few minutes late, as perhaps he gets into the swing of the work as fast as some of the others do that were in ahead of time. He must be made to realize, however, that his superior gathers the idea that being tardy in the morning earmarks him for not getting his work done on time. Jay must realize also that in large organizations he must perhaps move around geographically to get all the advancements as they become open to him. By this I mean that he and his wife must be prepared to leave friends and relatives behind if the better opportunity will come only from changing location. Jay might also be told in his book I visualize that he will be put on some jobs in an organization which, to his mind, have nothing to do with getting to the top. He must realize that knowing how an order goes through home office, knowing something about his company's accounting system and learning about some of the other services of his company give him a much broader base to become a member at the executive level on some future date. Jay must be told that he should perhaps study up on what types of patents his organization has taken out in the past, what their policy is so that he can get full recognition for some of the important work which he is doing, although this to him in his minor capacity may not seem important. He must realize by actually reading it in print that his superiors are busy people and have no time to read poorly written, poorly constructed reports. He may be very largely judged by the type of reports he writes. He must also be given to understand that, irrespective of the industry he has entered, there are trade papers, associations, etc. that he must become familiar with in order to broaden himself in the field of endeavor he has chosen.

I might even go farther and say that there might well be a chapter on the boss's attitude toward the new man. His superior must at all times show enough interest in the graduate to keep up his morale and his incentive, and this superior must let him feel that, should we have a definite problem on his mind, he can get help or at least consideration by talking with the boss. Too many times it happens that a young fellow, such as Jay, issues an ultimatum to the boss that if there is no raise of $30 a month next pay day, he is serving notice now. This sometimes results from the young man having an over-confidence in his ability, but many times it comes from a poor relationship between the boss and his workers. It reminds me of a recent cartoon where two marines on a lonely road on an island in the Pacific were picked up by an officer in a jeep because it was raining pitchforks and a long way back to camp. As they went along they began to whistle an aria from "Rigoletto", whereupon the officer said over his shoulder, "I am amazed with all this fighting spirit, leather-necked attitude, and continual talk of women that you would whistle that tune here." The answer quickly came back, "We are surprised that you recognized it". You can readily see that the barrier here was far too great. The line of authority can well be recognized between two people, and yet a spirit of good feeling can exist between them.

I am sure that many of you will have disagreements with a lot that I have said, both as to how the research of your Association is being carried out and particularly as to what I have said about the life of Jay Box. I am positive, however, that the officers of your Association will endeavor to give you the best that they know, and I am also positive that if Jay Box carries out sixty percent of some of the ideals I have mentioned above, he will succeed and will be much happier as a result of that success when he marries Dolly Washer and they have a little gig or two.

EMPLOYMENT REGISTER

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.

50-17

Education: University four years, Ph.B. in chemistry; Mass. Inst. Tech. two years, organic chemistry & research; dyes; optics.

Experience: Textile chemist; research, development & application of chemicals, dyes; resins; sales.

Age 51; married; references; eastern U. S. preferred but not essential.

6-26, 7-10

50-18

Education: B.S. in Chemistry from Brooklyn College; and in Textile Chemistry & Dyeing from Bradford Durfee Technical Institute.

Experience: Asst. Dyer and Chemist.

Age 26; married; references.

7-10, 7-24

50-19

Education: B.S. with graduate work in chemistry.

Experience: Chief chemist, dyes and intermediates.

Age 47; married, references; geographical location not essential.

7-10, 7-24

New York Section—

DOES MANAGEMENT APPRECIATE RESEARCH?*

ELLIOT BROADBENT
Assistant Manager of Glenlyon Print Works

The speaker defines three kinds of research with reference to textile manufacturing: namely, pure research, fundamental research and applied research. It is his view that pure research is usually left to advanced institutions of learning and research foundations; that fundamental research is conducted mainly by suppliers and dyestuff manufacturers and also by a few vertical textile organizations; and that applied reasearch must be carried out by every textile plant if textile manufacturing is fully to utilize the results made available by pure and fundamental research.

The importance of the fundamental research of the AATCC in the establishment of standard methods of testing by which superior quality in textiles can demand premium prices over poor quality is emphasized. The value of the research carried out co-operatively for AATCC Intersectional Contests is explained.

All the argument of the paper goes to prove that management does appreciate the value of the different kinds of research in bringing better quality and better profits to textile manufacturing.

SINCE you have asked me to come all the way from Rhode Island to answer that question, I can only conclude that management in the New York area does not appreciate research. In Rhode Island we appreciate it to the point where we feel research is absolutely necessary for us to stay in business. It might be compared to having a good wife. Those of us who are married are apt to take all her efforts at housekeeping for granted until the time she decides to go away for a couple of weeks; then we really appreciate what she has been doing all the years. To carry the analogy a little bit farther, I am afraid that most of us are just as sparing in telling those connected with research what a good job they are doing as we are in telling our wives the same thing.

Before getting my material together for this talk, I asked a friend of mine, who is actively engaged in research, if he had an answer to the question. He said, "Very definitely management appreciates research. After all, you get research for nothing. When times are lush you charge the expense against operating and thus reduce the amount that you have to pay for taxes. Then, when times begin to get a little harder, you simply disband the research organization". He cited three local examples where just that had been done. However, we both agreed that it was a very short-sighted policy, and was not usually the case with plants with a long record of successful operation. Actually, no such negative attitude should be taken in regards to research because usually it can pay big dividends, and should be considered as essential as any productive department in the plant.

Research usually takes three forms: 1. Pure research. 2. Fundamental research. 3. Applied research. We have to decide how much of each of these three types fit into management's picture. Pure research is rather remote for our activities. It is usually left to the universities and technological schools, and our support of it is equally remote. While fundamental research is carried on in some finishing plants, the bulk of it is performed by our suppliers, chiefly dyestuff and finishing-material manufacturers. We contribute to it by purchasing from these various suppliers, and have to make our contribution whether we choose to or not. It is my feeling that the plants which embarked on research programs requiring large appropriations and later closed them tried to enter too far into fundamental work. This work is already being done adequately by the large research laboratories of the various dyestuff and chemical manufacturers. The results of their work are ably presented and widely distributed, thus being available to all of us. Some of the large vertical textile organizations maintain good research facilities for their own use. They can well afford such work; the average finisher cannot and he should confine himself to applied research. Applied research is very close to home, and should be carried out in individual plants and in cooperation with our own organization, the AATCC.

By indirectly contributing to Fundamental Research, we have enabled our suppliers to carry out some excellent research, and they, as a result, have come up with such money-saving ideas as the continuous peroxide-bleaching units; the William's unit for continuous dyeing; the pad-steam unit for the same purpose; continuous pigment dyeing; many improvements in finishing, particularly the use of resin finishes both for crease resistance and shrinkage control, and the cation-active finishes. Those of you who are familiar with the continuous peroxide bleaching units know that management appreciates the saving in labor costs when using this type of bleaching. The saving of material is apparent when using the William's unit or the pad-steam unit in comparison with the old booster-box method. The ease with which light shades can be dyed by using pigments has resulted in material labor saving. The improvements in finishing techniques from using resins have put many a fabric into a higher finishing price category and have, therefore resulted in greater possibility of profits. Management always appreciates such possibilities.

Applied research at home, or among your own group, is usually divided into three parts: 1. That which takes place in your own plant. 2. Work carried on by the Research Committee of the AATCC. 3. Participation in the AATCC Intersectional Contests.

In one's own plant research activity generally means the development of new products, new processes and new equipment. With the return of a competitive market, such work is essential. Twenty years ago when the market became extremely competitive, management's first thought was "How can we cut to make ends meet?" This meant what degree of quality can be cut. Today, management is more research minded and demands of its research organization that something new and better be produced to stimulate business and to give an edge over competitors. This kind of thinking results in better money value for the ultimate consumer.

In addition to this, research work is necessary to combat the various troubles which arise: first of all, investigating the cause of the trouble, secondly how to overcome such trouble, and thirdly how

* Presented before New York Section in New York on March 3, 1950.

to prevent its recurrence. Constant investigation must be pursued of all new products that are offered by the various suppliers to see if such products live up to the claim of their manufacturers, and to see if those claims can be improved upon.

Another form of research, which should take place in one's own plant and which is relatively inexpensive and highly rewarding, consists of having the head of the research group do plenty of visiting. This does not necessarily mean visiting competitor's plants, but rather the research and control laboratories of our various suppliers. The technical groups in these laboratories are working on all manner of problems, and a great deal of knowledge can be acquired by fairly frequent visits to such places.

There can be no doubt that management appreciates the work done by the Research Committee on standardization. Those of us who were in this business thirty years ago can well recall the practically total absence of any kind of standards. When we competed with certain lines, a premium for extra fastness was difficult to obtain because of the fact that a competitor could make all kinds of claims with no standards to live up to. Today the AATCC tests have become well recognized throughout the industry, and in many cases have formed the framework upon which other recognized testing procedures have been built. The constant striving to produce equipment to simulate wearing or exposure conditions is an excellent project, and is certainly appreciated by management. The creation of proper standards and an insistence that these standards be met result in an improvement in quality. In addition, a desire for still higher standards is stimulated. As soon as the California law regarding the use of flammable materials was passed, our research group went to work to make instruments and test methods which made it possible for all of us to comply with the new law.

Finally, we come to that part of research contributed by participation in the AATCC Instersectional Contests. Personally, I deplore the tendency of some Sections to have outside research organizations perform the work for papers, and I have only one reason for so doing, that is, I feel that the men in the plants who neglect this opportunity for co-operative research work are really missing something of value. You know the Rhode Island Section has won more First Prize Papers than any other Section. I personally have participated with several of these Contest Committees. I would not hesitate to say that some representative of my company has participated in practically all of them, and it has always been our feeling that what we have contributed is small in comparison to what we have received. There may be the feeling on some people's part that participating in group research work may be divulging information which they are loath to divulge, and that group research puts everyone on a common level. This does not turn out to be the case for, although the same basic facts may be reported, alert and capable management makes greater use of these facts than management which is not so capable.

The work done by the Rhode Island Section last year on acid colloids has proved already a great benefit to several plants in our Section, and possibly to some in yours. The study of "Variables in Padding", which was submitted by your Section in 1948, was an extremely valuable paper and provoked a lot of interest among my colleagues in the East. A paper submitted by the Mid-West Section in 1947 on the "Use of CMC To Prevent Re-deposition Of Soils and Pigments In Scouring" has proved to be of great value, and certainly management has appreciated research of this kind. The 1947 Rhode Island Paper, which showed the effect of pH on the substantivity of vat pigments, was beneficial to very many. The use of white dextrin in the production of blue vats on continuous machines submitted by the Piedmont Section in 1948 was a piece of excellent research work, which any management concerned with the dyeing of vat blues most certainly appreciated. The recent work by the General Dyestuff Company on aging has provoked a tremendous amount of interest, which I am sure management will eventually cash in on.

I could go on indefinitely citing examples of research which have been of value to management, and I am sure that capable management does appreciate research.

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153 At Mid-West Section Annual Outing

THE annual outing of the Mid-West Section was held at Lake Lawn Lodge, Delavan, Wisconsin, on June 17, 1950, and was attended by 153 members and guests.

In the morning a softball game was played between the salesmen and millmen, and was won by the salesmen, 6 to 4.

After a buffet lunch most of the members and guests headed for the golf course, while others entered a horseshoe pitching tournament.

In the evening, after an excellent dinner, the skill and or perseverance of the golfers and "barnyard" golfers was rewarded with trophies and prizes of all descriptions. J. G. Stott, chairman of the outing committee, assisted by his committee members, awarded the many fine prizes which were made available through the generosity of many mill and supplier friends.

Golf winners were as follows:

Millmen's Trophy—(1st low gross—millmen) 82—Bob Anderson tied with Ken Harms.

Salesmen's Trophy—(1st low net—millmen) 107-48-59—Ray Nelson.

Members: 1st low gross—77—Jim Morrison; 2nd low gross—79—Elmer Smith.

Class A — 1st low net—81-12-69—George Willgeroth; 2nd low net—87-15-72—Tom Ratajczak.

Class B—1st low net—94-27-67—W. H. Wadsworth; 2nd low net—90-21-69—Ken Giese.

Class C—1st low net—106-42-64—Iver Rolfe; 2nd low net (tied)—102-33-69—F. Gurry; 105-36-69—H. Proudfoot

Class D—1st low net—107-48-59—Ray Nelson; 2nd low net—114-54-60—N. F. Toussaint

Guests: 1st low gross—70—M. Stahl; 2nd low gross—75—B. Behman; 1st low net—113-51-62—F. Raasch; 2nd low net—102-39-63—Don Purdy; 3rd low net—101-36-65—Ray Kaunheiser; 4th low net—120-54-66—M. F. Munson.

(Peoria handicapping system)

Horsehoe winners were: *Singles*—B. Isenogle; *Doubles*—Charlie Robbins, Bill Adkins.

All members of the outing committee, headed by J. G. Stott, and including the weatherman, are to be congratulated on making the 1950 annual outing the success it was.

Respectfully submitted,
JOHN E. A. SCHRODER, *Secretary*

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Initial UTI Student Chapter Outing Successful

THE first outing of the Utica Technical Institute Student Chapter was held at Dawe's Grove at Clinton, New York on Thursday, June 1. About 95 per cent of the members, along with faculty advisors and alumni, were present. Refreshments were served and a softball game was held between first and second year students, with instructor Francis Galligan leading the first year students to a decisive victory.

A short business meeting was held in the afternoon at which it was decided to form a textile division of the Utica Tech Alumni Association. It was also decided to make this affair an annual outing.

Respectfully submitted,
LESTER B. HENRY, *Acting Secretary.*

Rhode Island Section—

CURRENT TRENDS IN THE WOOL INDUSTRY*

HANS LUTTRINGHAUS

General Dyestuff Corporation, New York, N. Y.

The current trend in the wool industry is toward increased use of those dyes with which improvements in one or more of the following factors in dyeing can be obtained: penetration, uniformity of coverage, fastness to light, fastness to fulling, fastness to peroxide bleaching, length of dyeing cycle or preservation of wool fiber. Metallized acid dyes, leuco esters of vat dyes and Helindon vat dyes make these improvements possible. Dyeing assistants are now available with which the nylon in nylon-wool mixtures can be more easily either left white or dyed tone-in-tone.

WHEN I was asked to give a paper before this section, the wish was expressed not to adhere to one single subject but to touch several fields to which the wool and worsted industry has given increased consideration. Thus it is hoped that diversified interests will be aroused, and that many of you will find a stone in this mosaic to throw at me in the discussion.

When various topics are reviewed it will be necessary to repeat in some instances ideas that have been discussed at other times. If such duplications are of advantage for this paper, it should not be necessary to apologize for them.

METALLIZED DYESTUFFS—When I show you first-class gabardines with a perfect dyeing job and ask your opinion how they were dyed, most of you would answer that metallized dyestuffs were used. You would be right because no other class of dyestuff is so simple to apply and would produce such delicate and uniform shades with fastness properties sufficient for men's wear. It is natural that the metallized dyes, which you know under the names of Palatine Fast, Neolan, Chromacyl, Calcofast and others, appeal most of all to the piece dyers. The advantages over the various chrome-dyeing methods are manifold. The dyer can observe the shade of the dyeing constantly and does not need to wait for the shading until chroming is practically completed. Of course, shading can be done when dyeing is carried out on a chrome mordant, but the dyeing time is almost prohibitive. On the other hand, chromate-dyeing methods usually do not produce so good a penetration as is obtained with Palatine Fast dyes, especially on tropical worsteds or on gabardines. The possibility of heat wrinkles is greatly reduced and sensitivity for metals like iron or copper is practically nonexistent with Palatine Fast dyes. The outstanding feature, however, is that they can be applied to carbonized and unneutralized piece goods. This means that metallized dyes level well in the presence of high amounts of sulfuric acid. This leads us to the fundamental difference between the application of metallized and acid dyes. When wool dyed with a metallized type is boiled with white wool and increasing amounts of sulfuric acid, we observe that more dyestuff is transferred to the white wool with the higher amounts of acid; therefore, increasing amounts of acid increase the leveling of metallized dyes. The introduction of a metal, such as chromium, into the molecule of the dyestuff changes its dyeing properties to a great extent. Since not only the dyeing properties are changed, but also the fastness properties are increased, we have to assume that the chromium in the complex plays a part in the fixation of the dyestuff on the wool. The chromium that is contained in the complex has the ability to form a co-ordinative linkage with the keratin molecule. Wool therefore forms two different linkages with chromiferous dyestuffs, a salt linkage between the free dye—acid and the wool as it is with regular acid dyes, and a co-ordinative linkage between dyestuff complex and basic groups of the wool.

With the addition of acid, salt formation is intensified while the co-ordinative linkage is weakened. During the dyeing of Palatine Fast dyes these two reactions are running in opposite directions. But the co-ordinative linkage of the chromium complex has more bearing on the affinity for the fiber than the salt formation. When the complex formation is retarded by the addition of more acid the degree of affinity as a whole is lowered. This is the reason that higher amounts of sulfuric acid slow down the exhaustion of metallized dyestuffs. With 2 to 3% of sulfuric acid we obtain, therefore, a better exhaustion than with 8%; but a dyeing carried out with the lower amount is usually skittery. Since the higher amount of acid slows down the exhaustion we can regard this acid as a leveling agent. Based on this consideration we prefer in most cases to add all the acid at the beginning of the dyeing and not in portions during the process, just as we would prefer to add a leveling agent to the bath at the beginning of the dyeing process and not later on. If the amount of sulfuric acid necessary for acceptable results is regarded as excessive, it can be lowered if the leveling action is taken over by an auxiliary agent.

LEVELING AGENTS—The nonionic Palatine Fast Salt O Solution and the anionic Palatine Fast Salt N Conc. Powder are leveling agents that permit reduction in the amount of acid in the application of metalized dyes. The nonionic type, by combining with several dye molecules through secondary valencies, produces a larger particle size; thus a reduction in the speed of diffusion is obtained. The molecules of dye are liberated gradually and can then go on the fiber. Palatine Fast Salt O Solution therefore retards the exhaustion of the dyestuff without reacting with the wool itself.

The anionic type has affinity for the fiber. It goes on the fiber first and produces a temporary reduction of affinity for the dyestuff.

Instead of adding 8% of sulfuric acid to the dyebath it is possible to reduce this amount to 4 or 5% when 2% of Palatine Fast Salt N. Conc. Powder or 3% of Palatine Fast Salt O Solution is used. The powder brand is superior to the O Solution as far as penetration is concerned, but Palatine Fast Salt O Solution is better in the case of mixed or tippy-dyeing wool.

While metallized dyestuffs approach chrome dyes in many fastness properties,

* Presented before Rhode Island Section in Providence on April 28, 1950.

we must keep in mind that the chrome complex is easily affected by water softeners, regardless of whether they are inorganic phosphate salts or organic compounds. An addition of a water softener to a dyebath with Palatine Fast Green BLNA does not produce a green but a reddish violet. The azo dyestuff from which Green BLNA was derived is a red, and by removing part of the chromium out of the complex the original shade is approached. At the same time the fastness properties are destroyed. Other types do not show this radical change in shade, but the fastness properties are affected nevertheless. It is therefore important that water softeners be avoided in the application of metallized dyestuffs.

That the chromium in the completed dyeing is capable of further action can be shown when a dyeing of Palatine Fast Yellow GRNA is topped with Chromoxane Pure Blue BA. This chrome dyestuff produces a dull red before chroming, but when it is dyed on a Palatine Fast Yellow GRNA bottom, not the expected orange is obtained but a green. When Palatine Fast Yellow GRNA is topped with an acid color like Supranol Bordeaux BRRN, which does not react with chromium, the expected color combination of yellow plus Bordeaux is obtained.

NYLON-WOOL MIXTURES—The discussion of Palatine Fast Salt N Conc. Powder leads us now into an entirely different field. It was said before that this product has affinity for the wool. However, its affinity for nylon is very much better than for wool. This is an important fact for the dyer who has to handle mixtures of wool and nylon. Different dyestuffs have different affinity for nylon in the presence of wool. There are undoubtedly dyestuffs which perform better on mixtures of nylon and wool than others. But I must say that there is no such thing as a group of dyestuffs which dye wool and nylon satisfactorily tone-in-tone in all depths. First of all we have to consider that nylon has a saturation point for acid dyes, which varies for different types, but rarely approaches that of wool. In heavy shades, therefore, nylon has the tendency to appear lighter than wool. The best results for heavy shades are obtained with products of lower sulfonation. Even dyestuffs that produce tone-in-tone dyeings in medium shades do not dye satisfactorily in light or pastel shades. Nylon absorbs small amounts of dye much more quickly than wool, especially from an acid bath. Monosulfonated dyes exhaust faster on nylon from a strongly acid bath than from a neutral bath. This can be accepted as a general rule. However, not only the degree of sulfonation determines the exhaustion on nylon, but the position of the sulfonic group and other changes in the molecule also show an influence. But Palatine Fast Salt N Conc. Powder has exhaust almost completely on the nylon that the dyestuff is retarded long enough from the nylon to permit its exhaustion on the wool as well as on the nylon. Thus, we can produce tone-in-tone dyeings in light shades with dyestuffs that would exhaust almost completely on the nylon in the absence of Palatine Fast Salt N Conc. Powder.

Today acid dyestuffs, level-dyeing and milling types, and also Palatines, are successfully dyed on nylon-wool yarn and piece goods. Since different blends produce varying results with the same dyestuffs, and since different amounts of dyestuffs produce varying results on the same blends, it seems to be necessary to handle each case separately; no specific group of dyes solves all problems. In very adverse cases, as when reworked nylon is present so that it appears throughout the material in nubs, or when the blend is unsatisfactory for some other reason, or when the shade is too dark, Celliton colors can be of considerable help. It is possible to apply them to wool—nylon mixtures in the presence of ammonia at about 160-180°F. so that a minimum of Celliton colors is absorbed by the wool. After application of acid dyes the material does not crock and is sufficiently fast for many purposes.

When nylon is resisted with Nylon Resist GDC, white and colored effects can be obtained, which open new fields for the designer. Nylon Resist GDC is fast to acid crossdyeing and fast to fulling.

ALGOSOLS—If I show you blankets with stripes of pink, blue, orange, lime, or other shades which have been peroxide bleached after dyeing, you know immediately that these shades could not have been dyed with acid and chrome colors. As a matter of fact, such white blankets could not be manufactured if the dyeings were not carried out with vat colors or leucoesters of vat colors. The leucoesters, which are on the market as Algosols, Indigosols, Solvat, Calco Soluble Vats, and Ponsol Soluble, are soluble in water and are applied to wool from a weakly acid bath at the boil; after that they are developed at 185°F. with bichromate and sulfuric acid, with the exception of Algosols Blue O and OR, which are dyed at the boil with stronger acids and are developed cold with sodium nitrite and sulfuric acid. A recent publication (*The Dyer*, Feb. 24, 1950) describes application from a neutral bath at 180°F. This might be done for certain extremely light shades, but otherwise this application gives inconsistent results. The exhaustion is incomplete in most instances; often as much as 50% of the dye remains in the bath. Such a method of dyeing is prohibitive for the expensive leuco esters. Even for very light shades we prefer to add 1 to 2% of ammonium sulfate to the dyebath, mainly to prevent dulling of the shade, which might occur in a neutral bath, especially if the wool is not free from alkali. The high amount of sulfuric acid necessary for the development of leuco esters was always a drawback; therefore, we have introduced the use of phosphoric acid in place of sulfuric acid. Phosphoric acid produces duller shades, but in most cases, especially for men's wear, this is immaterial, as long as the formula can be adjusted to the desired shade.

CONTINUOUS DYEING—The use of phosphoric acid with leuco esters led to another interesting development. We succeeded in preparing concentrated, stable solutions of Algosols. Slubbing padded through such a solution and steamed for 4 to 6 minutes can be developed by a passage through phosphoric acid and an oxidizing agent. The complete dyeing and oxidizing time is about 7 minutes. In this way it was possible for the first time to dye and develop Algosol Blue O and 04B together in the same operation.

HELINDONS—Dyers who were reluctant to use Algosols because of price or any other reason might show less hesitation to use vat colors. We have expressed our opinion before that only certain selected vat colors should be used for wool. The Helindon dyestuffs are those vat colors that need only a minimum of alkali and are dyed in the presence of only 1 to 3% of ammonia on the weight of the wool for one-half to one hour at 120 to 140°F. In most cases they can be exhausted with ammonium sulfate. The low pH and the short dyeing time at a low temperature assure less damage to the wool than any other dyeing method. An increase of 20% in tensile strength and elongation over a chrome dyeing is not unusual. Anybody who has tried these dyes will be easily convinced that the quality of wool dyed with Helindons is extraordinary. When we add to this the savings in labor cost and steam we have a prospect that looks rather attractive. It is also possible to dye Helindons on chlorinated tops; and yarn produced in this way shows better tensile strength and higher elongation than identical yarn dyed with chrome colors.

FADE-OMETER—It has been shown and explained before that vat colors, which show an outstanding fastness to sunlight on wool, might be destroyed in

the Fade-Ometer in a short time. Comparative spectrophotometric reflection readings of exposed chrome dyeings, vat dyeings and soluble-vat dyeings have shown that Algosols and Helindons might fade 5 times more quickly in the Fade-Ometer than in regular sunlight when compared with chrome dyestuffs. Fade-Ometer exposures of vat-dyed wool might, therefore, be entirely misleading and might not correspond at all with the actual fastness to light. Agencies that insist on testing vat-dyed wool in the Fade-Ometer and that make such results decisive deprive themselves of the possibility of obtaining material vastly superior to what they now receive.

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Commercial Standards For Water Repellent Textile Fabrics for Outerwear Apparel

Statement of Arthur Kahn, Arthur Kahn Co., Chairman, Water Repellent Fabrics Division, Textile Fabrics Association

A RECOMMENDED Commercial Standard for Water Repellent Textile Fabrics for Outerwear Apparel is now being circularized for acceptance by the National Bureau of Standards among interested parties. This Standard has been approved by the Textile Fabrics Association, as well as a number of other associations, this approval indicating the general support of the recommendation by the associations so approving. This Standard is the culmination of several years of effort on the part of the Water Repellent Fabrics Division of the Textile Fabrics Association. In drawing up this Standard, the association had splendid cooperation on the part of the chemical manufacturers, the finishers and the retailers. Manufacturers of rainwear were kept abreast of the development of the work of the association in this respect, realizing as they do that standards set up for fabrics must of necessity follow through to the finished garment, in order that the consumer may have the greatest benefit.

The development of these Standards while having been under consideration by the Water Repellent converters for some little time, received its real impetus when they were informed by the Federal Trade Commission that it had received a sizeable number of complaints from consumers cencerning unsatisfactory protection from garments alleged to have been treated for water repellency, and its was realized that in order to bring order out of chaos, remove unfair competitive methods and correctly represent merchandise, it would be necessary to establish a floor or commercial standard which would set forth proper fabric specifications which would meet proper requirements for consumer needs when tested by appropriate test methods.

At the time the Textile Fabrics Association began considering this question, there was no method of making laboratory tests which would calibrate with actual rainfall. The same problem had presented itself to the U. S. Army and also to the manufacturers of water repellent chemicals.

The Water Repellent Committee of the American Association of Textile Chemists & Colorists, under the guidance of George Slowinske, perfected a machine known as the Raintester, which has subsequently been officially approved by the AATCC. Garments treated with water repellents were tested in the rain room of the Philadelphia Army Quartermaster and the results obtained were compared with accelerated laboratory tests on the Raintester and a satisfactory scale of actual field performance was worked out.

While this work was going forward, the Federal Trade Commission called a meeting in Washington of representatives of the chemical manufacturers, textile finishers, converters, retailers and rainwear manufacturers and told the meeting of the complaints which it had received from consumers concerning the inefficacy of rainwear. The Commission suggested that if the entire industry, beginning with the chemical manufacturers and carrying through to the rainwear manufacturers, would get together and attempt to set up standards for satisfactory performance of rainwear fabrics and garments, the Commission would be glad to extend its cooperation in suggesting Trade Practice Rules covering the sale and distribution of fabrics and garments complying with standards so created. A committee was appointed at this meeting to cooperate with the Commission in this undertaking, which was composed of Leonard S. Little (DuPont Co.) Chairman, W. P. Fickett (Textile Fabrics Association), C. W. Dorn (J. C. Penney Co.—National Retail Dry Goods Assn.) E. M. Edgerton (Pacific Mills—National Assn. of Finishers of Textile Fabrics) and Arthur Kahn (Arthur Kahn Co.)

It will be noted that this committee was composed of important branches of the industry, all having a knowledge of the necessary chemicals, chemical finishes, and types of cloth best suited to give water repellent protection. This committee has held many meetings and up to the moment a very tangible result of its meetings has been the development of the Recommended Commercial Standard now submitted to the trade by the Bureau of Standards for acceptance.

In connection with these Standards, new methods for making tests for washing and dry cleaning to determine the permanency of water repellents had to be developed, and, using the AATCC Raintester experiments, the results were calibrated against results obtained on garments, etc.

In connection with all of this work, it is fitting and proper that we give credit to the fine suggestions and constructive work done by H. A. Ehrman of the Commodity Standards Division and W. D. Appel, both of the National Bureau of Standards. They have been extremely helpful and their cooperation invaluable.

Upon the general acceptance of the Recommended Commercial Standard as standard trade procedure (the acceptances are now coming into the Bureau of Standards very nicely), it is expected that the Federal Trade Commission will announce proposed Fair Trade Practice Rules pertaining to the sale and distribution of Water Repellent Fabrics for Outerwear, including garments such as rainwear, etc., and a general Trade Practice Conference called under the auspices of the Commission to consider the proposed rules. It is hoped that the Commission will base their proposals upon the Recommended Commercial Standard, incorporating the test methods, etc., as a basis for rule compliance, by reference. Such a procedure will enable the converter to properly label his water repellent piece goods, and the garment manufacturer to properly identify his garment, as to the durability of the water repellent and the protection it will afford the consumer.

These steps are for the benefit of the consumer, as manufacturers will have definite standards for their guidance in manufacturing garments to comply with standard water repellency tests, and thus enable the manufacturer to sell these garments with the assurance that the performance of the garment may be expected to be in conformity with the representation or label under which the garment is bought by the consumer.

In considering these Standards, converters and rainwear manufacturers must remember that the test methods are perhaps somewhat technical but the fundamental requirements of the Standard are really simple. Two types of water repellent finishes may be so indicated—that is, Durable and Retreatable. A Durable finish is one which will withstand at least three washings or three cleanings and a Retreatable finish is one which must be renewed after each washing or cleaning.

The fabrics are divided into three classifications — shower, moderate rain and heavy rain resistant. Each classification carries the specific specifications for such class, and each class indicates the approximate length of time the fabric will resist rain before water leaks through the intercises. A fabric labeled as "shower resistant" must pass the minimum requirements prescribed by the tests or it cannot be sold as a rainwear fabric. Moderate rain and heavy rain resistant cloths must of necessity meet higher standards.

The specifications were prepared through cooperative efforts of chemical manufacturers, converters, finishers and retailers. It is therefore reasonable to assume that the specifications are fair and equitable, that their adoption will give the consumer far better shower or rain protection than he now has, particularly in lower priced rainwear, and at the same time place the entire rainwear industry upon a higher level through the elimination of misrepresentation of water repellent performance of garments.

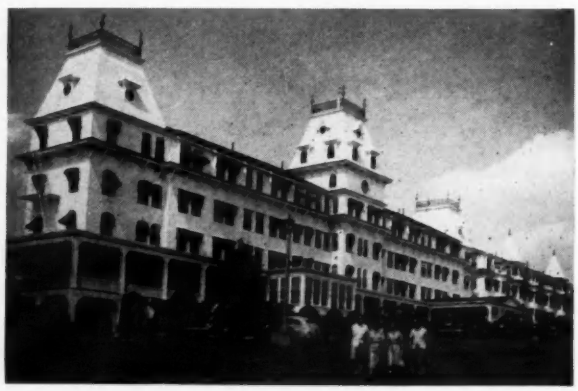
To those who feel that the Standards might be difficult to meet, we say that it is not difficult to produce fabrics which will pass the recommended tests either in cotton or rayon, or a combination of both. It is simply a question of weaving fabrics with enough warp ends and picks so that the intercises are small and to properly apply the water repellent treatment. These recommended Standard tests will, we know, eliminate fabrics primarily designed for other purposes but marketed as style rainwear, without any regard whatever as to the utility purposes of such garments and which have been thoroughly unsatisfactory to the consumer, even though such fabrics may have been treated for water repellency.

To summarize, we believe that upon the general acceptance of the proposed Commercial Standard, together with the forthcoming Trade Practice Rules to be worked out by the Federal Trade Commission, it will no longer be possible to sell a garment on the merit of the water repellent alone. The resistance of the cloth to penetration of rain is equally important and must be recognized.

"Advancement, Achievement Through Continued Cooperation"
1950 Convention

Wentworth-by-the-Sea — Portsmouth, N. H. — Sept. 28, 29, 30

AUSPICES OF RHODE ISLAND SECTION



Lou Koch Service

Front View, Wentworth-by-the-Sea

• PATENT DIGEST •

PAUL WENGRAF

ACRYLONITRIL FIBERS (Orlon)— Dyeing With Acid Dyes—Hydrazine Treatment C, 4, 07

U. S. Pat. 2,497,526 (Du Pont—Arnold—February 14, 1950).

Acrylonitril fibers, known among others by the tradename "Orlon", have a very low affinity to dyes in general. This specification recommends a treatment with hydrazine, homologs thereof or salt solutions. For example, a skein of polyacrylonitril filaments is suspended in hydrazine for 30 min. at 95°C. Thereafter the material is rinsed and dyed in an acid dyebath in presence of acetic acid at the boil. While the original nontreated fiber remains uncolored in a dyebath of the same composition, the hydrazine pretreated fiber takes up about 0.6% dyestuff. The mechanical fiber properties are almost unaffected.

According to examples the process refers principally to acid dyes, e.g., acid azo-dyestuffs, but the inventor discloses that neutral, anthraquinone, acetate, direct and chrome colors can be applied as well according to this method.

Reference cited by the Patent Office:

U. S. Pat. 2,436,926 (1948—Du Pont): acrylonitril or mixtures thereof with methacrylic acid, esters, vinyl acetate, etc., polymerized in the presence of ammonium persulfate. In this process small amounts of other nonpolymerizable organic compounds (ketones, dioxalanes, aldehydes, also hydrazines) can optionally be added as "modifiers" to regulate the final molecular weight.

DYEING KERATINOUS FIBERS—Acid Dyes Plus Swelling Agents at Low Temperatures C, 4, 06

U. S. Pat. 2,501,184 (Lawrence Richard Bruce Inc.—Michaels, Berk—March 21, 1950).

The generally used dyeing method for keratinous fibers (especially wool) in an acid bath at the boil has been abandoned in the present process. It has been found that weak acids react with the fiber to a high degree with the effect of opening the fibers. The inventors are aware that this reaction has previously been used to a limited extent for imparting a surface coloration to the fibers not sufficient by itself to obtain normal, thoroughly penetrating dyeing effects. According to this invention the aforementioned opening reaction has to be followed by a considerable swelling reaction, breaking up the secondary linkages of the keratinous fiber and opening the pores to permit complete penetration of the cuticle and cortex substance, thus producing dyed fibers useful for commercial applications. The slightly acid media employed in this process (pH = 3—7) may either be organic acids (acetic, formic, tartaric, etc.) or slightly acid salts such as sodium dihydrogen phosphate. The swelling agents are, preferably, urea or derivatives thereof (alkylurea, carbamates), amides (formamide), salts of amines (guanidine, amylamine), phenols, nitroparaffins (2-nitro-1-propanol), and so on. An example cites the dyeing of human hair to a medium brown shade by treating for 30 min. at 35°C. in a bath containing dilute acetic acid, urea and a mixture of "D. & C." dyes of National Aniline Co. These consist of D. & C. Black No. 1 (Naphthol Blue Black, C.I. 246); D. & C. Brown No. 1 (Resorcine Brown, C. I. 234) and External D. & C. Red No. 13.

References cited by the Patent Office, among others:

U. S. Pat. 2,303,932 (1942—Gould): a cleaning agent consisting of lactic or acetic acid (or other nonirritating compounds) combined with a sulfonated ether, prepared from a phenol and ethylene oxide.

U. S. Pat. 2,261,094 (1941—Speakman): treatment of keratinous substances, especially wool, by disrupting cystine bonds; the process consists of reducing these bonds to sulfhydryl groups and thereafter fixing the reactive end groups with amphoteric salts or dichloro organic compounds.

U. S. Pat. 2,238,949 (1941—Schlack): improving the affinity of fibers to acid dyestuffs by an impregnation with cyclic thiourea- or isothiourea derivatives such as the amino-oxazolines, thiourea- or isothiourea ethers reacting with imino- or amino groups of the protein fibers.

U. S. Pat. 2,185,467 (1940—Rit Products Corp.): a hair dyeing composition comprising an organic dye and a water soluble alkyl cyanate.

Other Reference:

French Pat. 762,985 (Ciba): adding urea to acid chrome dyestuff baths to make possible dyeing with reduced amounts of acids.

Although dyeing of all kind of keratinous fibers is within the scope of this patent, the principal aim seems to be dyeing human hair. That can be concluded from the preamble of the specification, referring to dyeing at low temperatures in the range of human body tolerance.

DYEING APPARATUS—Impregnating Device Combined With Developing Chamber C, 6

U. S. Pat. 2,501,480 (Botany Worsted Mills—Stec—March 21, 1950).

A continuously moving fabric (5) passes first through a dye chamber (3)—see Fig. 1—being squeezed out by pressure rollers (8 and 8 x) and then over roller (12) in a secondary dye tank (14). From here the cloth is led through opening (17) into a developing chamber (16), which is heated by steampipes (28). The main characteristic of this chamber is in that the web is led in the form of spirals downwards and upwards as illustrated in Fig. 1. The layers are transported upwards by two chains (21) driven by sprockets (23) and (24). The innermost layer is finally led by two rollers (29) over the smoothing plate (30) to a turning bar (31)—see Fig. 2—and from here through opening (44 in Fig. 1) to the delivery rollers (45). The chamber (6) is V-shaped to economize on the amount of developing solution. The time of travel through chamber (6) can be controlled by the number of separating rollers (20) by optionally leaving out some of them when a short period of aftertreatment is required. Obviously any kind of dyes necessitating an aftertreatment (e.g., vats, chrome dyes, etc.) can be applied. The device can also be used for stabilizing dyes by fixing agents, for improving the washfastness or fastness to light or for similar operations. The patent does not mention a specific class of dyestuffs; thus, aftertreatments of all types of dyeings are practically within the scope of this invention.

References cited by the Patent Office, among others:

U. S. Pat. 2,174,215 (1939—Rose): a decatizing machine characterized by two longitudinally moving belts, the fabrics being placed in between; one of the surfaces of the fabric is adjacent to a steam

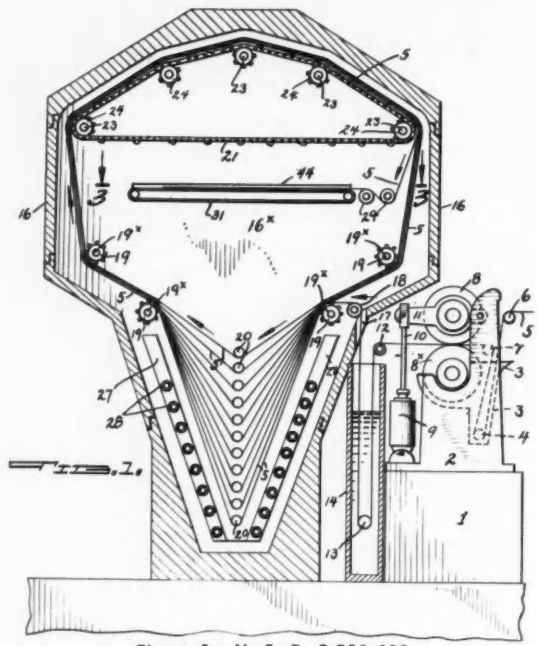


Figure 1—U. S. P. 2,501,480

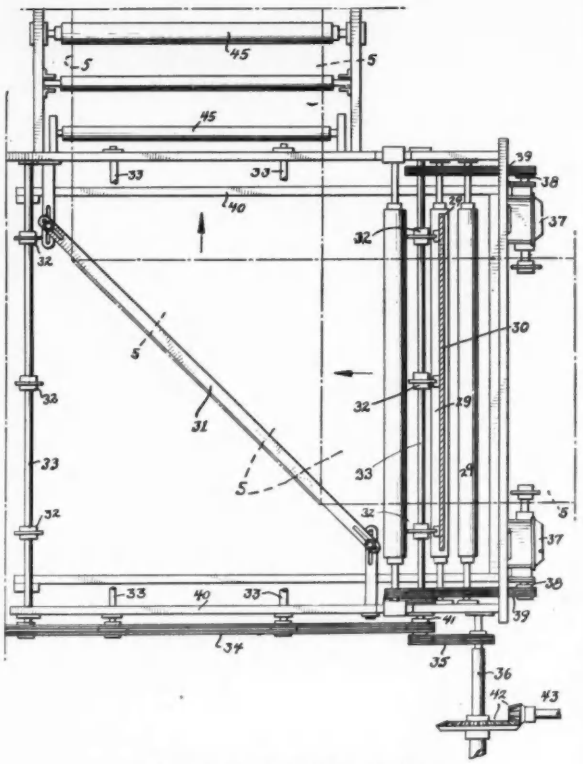


Figure 2—U. S. P. 2,501,480

chamber, the other one to a vacuum chamber.

B. P. 486,029 (1938—Gerber): an aging apparatus introducing the fabrics to be steamed by a carriage into a tunnel-like chamber located in the center of the ager. The fabrics are conveyed in a spiral track through the ager and finally conducted through an opening of the outer wall of the steaming chamber.

Other Reference:

Brit. P. 484,991 (Collins & Aikman): a dyeing apparatus consisting of impregnating and developing units working in tandem. The fabrics impregnated with a concentrated dye solution are introduced into a closed chamber where the dyeings are developed by steam. No means for leading the fabric in a spiral path are used such as in the present invention.

WATER REPELLENT FABRICS—Hydroxymethyl-derivatives of Polymeric "Amic" Acids G, 2, 02

U. S. Pat. 2,504,003 (Du Pont-Cupery—April 11, 1950).

A polymeric polycarboxylic acid, such as a styrene-maleic acid anhydride polymer, is dissolved in an organic solvent (preferably ethylmethyl ketone). Ammonia is passed through this solution until the ammonium salt settles out. This product is further reacted with formaldehyde; after the addition of some more ammonia and heating, a clear, water soluble viscous liquid is obtained which has the constitution of a methylolderivative of the *styrene-maleamic acid*. Paraffin wax is homogenized with this product, giving a stable aqueous dispersion, which can be kept for a long time and diluted with cold water. Textiles impregnated with this dispersion and baked at temperatures slightly above 100°C. become durably water repellent.

References cited by the Patent Office:

U. S. Pat. 2,381,020 (1945—Carbide & Carbon Chemical Co.): accumulation of static electricity of a vinyl polymer is retarded by a treatment with water soluble polyalkyleneimine compounds, e.g., condensates thereof with ethylene diamine, fatty acids and the like.

U. S. Pat. 2,373,548 (1945—D'Alelio, General Electric): removing cations from natural water by means of ion-exchange resin compounds of an aldehyde, a phenol and a partial amide of a carboxylic acid.

U. S. Pat. 1,976,679 (1934—I. G. Farben): dispersions of polyacrylic substance used in printing textiles (especially as thickeners), for fixing dyes and for printing discharges.

Reference is further made to U. S. P. 2,456,177 (1948—Du Pont): styrene-maleic anhydride polymers are reacted with higher amines in an organic solution and then neutralized with ammonia. The higher amines are so well dispersed that all kinds of coatings (e.g., water repellent) can be obtained. It is noted that this process differs from the present method in that aqueous dispersions used for baking finishes are applied. Water dispersible compounds of this type (e.g., polymer octadecylbutylstyrenemaleamic acid), suitable for coatings or the like, are obtained by homogenizing these condensates with ethylene polymers (U. S. P. 2,496,969, Du Pont).

CLOTH HANDLING APPARATUS—Treatment in J-Box B, 3, 01

U. S. Pat. 2,503,817 (Defiance Manufacturing Co., Graham—April 11, 1950).

This specification states that handling raw stock (thus, in general, continuously pretreating fabrics in boiling-off procedures and the like before bleaching) has the difficulty that the web in rope-form tumbles down the vertical chute of a standard J-box and tangles into a loose uncontrolled mass. The object of this invention is to find a method for controlling the movement of the fabric so that the material is deposited in an orderly arrangement in the chute and drawn off with no tangles formed in the operation. The J-box is provided (see

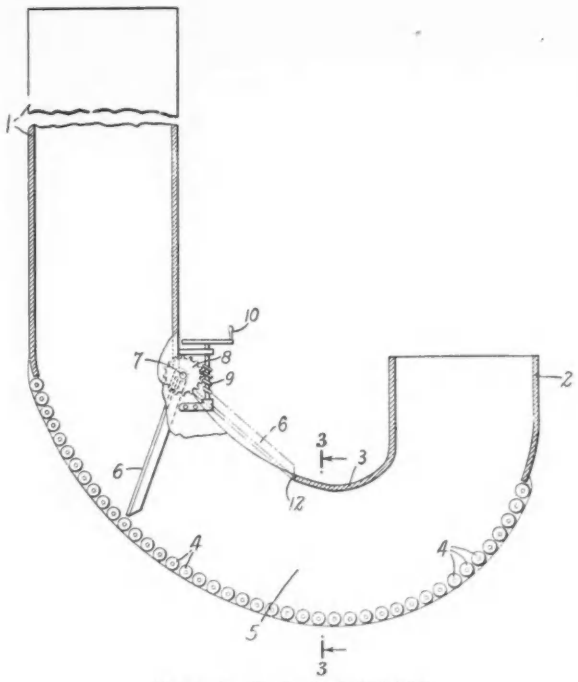


Figure 1—U. S. P. 2,503,817

Fig. 1) with an opening (12) cut in the curved chute (3), which can be closed by a gate (6) secured to a shaft (7). When chute (1) is full, gate (6) is swung into the other direction (shown by dotted lines) and the rope can move into and through (2) with no tangling or distortion. A series of rollers (4) journaled in wall (5) evidently help to keep the movement under control.

References cited by the Patent Office, among others:

U. S. Pat. 1,943,342 (1934—Amco Manuf. Co.): an automatic draft regulator in chimneys, etc., set at a predetermined degree, preventing sudden changes in the draft.

U. S. Pat. 940,942 (1909—Boynton Furnace Corp.): a damper on a furnace for stove pipes, which can be easily applied to the individual pipes to close them more or less and to prevent combustion gases from being ejected into the surrounding atmosphere.

WATER REPELLENT FABRICS—Titanium Salts Combined With Glyerol Mono Acid Ethers G, 2, 02

U. S. Pat. 2,505,259 (Du Pont—Signaigo—April 25, 1950).

This patent states that earlier methods for rendering fabrics water repellent comprised treatments with emulsions of waxes, paraffins, resins and the like; these finishes were generally unstable to laundering or dry cleaning. The present invention aims to obtain durable effects by applying combinations of titanium salts with a long chain fatty acid ester of a polyhydric alcohol. These esters have at least one free hydroxygroup and no other substituent than the fatty acid group. Glycerol monostearate is a preferred example for the organic component applied in this process. Fabrics impregnated with this composition are thereupon neutralized and dried. In an example, a poplin cloth is first padded in a dispersion of glycol monostearate for about 10 minutes followed by the immersion of the material for one hour in a 25% titanium sulfate dispersion in glycol monostearate. It is finally treated with 2% aqueous ammonia, washed and dried. The water repellent effect is said to subsist after repeated laundering or washing in chloroform or alcohol. Other examples cite the pretreating of cloth in a glycerol monostearate solution in acetone, followed by an aftertreatment with a titanium salt emulsion as mentioned above or for a one bath treatment in titaniumsulfate dispersed in glycerol monostearate, followed by an ammonia passage. Other titanium salts or other fatty acid monoesters (e.g., glycerol monolaurate) may be used instead. The impregnating process is preferably carried out at slightly elevated temperatures up to 100°C.

References cited by the Patent Office, among others:

U. S. Pat. 2,402,857 (1946—Titanium Alloy): textiles are rendered water repellent by using an aqueous colloidal suspension of zirconyl soaps prepared by mixing ammonium salts (carbonates, carbamates) with zirconium salts and soap. (see REPORTER 1946, 719).

U. S. Pat. 2,356,161 (1944—Du Pont): chromium complex compounds (e.g., $Cr(OH)Cl_2 \cdot 3\ H_2O$) in solvent solution (Werner-type compounds) are combined with cyclic carboxylic acid compounds of high molecular weight such as hydrogenated rosins or naphthenic acids.

U. S. Pat. 2,035,504 (1936—Celanese): dispersions containing titanium dioxide in acetone are applied. These are of such a degree of alkalinity that the acetate fiber does not undergo saponification.

U. S. Pat. 2,035,483 (Celanese): acetate of cellulose delustered with a titanium salt solution containing urea and a wetting agent.

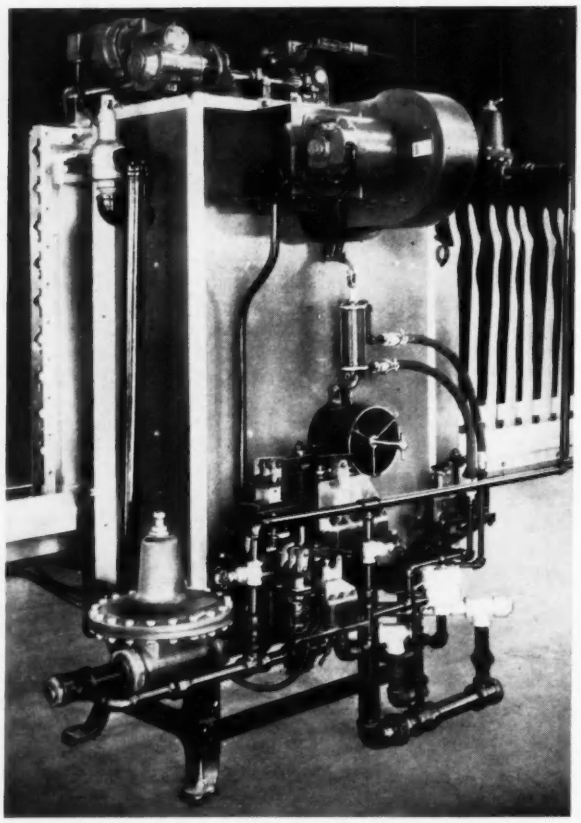
Brit. Pat. 391,772 (Celanese): acetate of cellulose fabrics impregnated with titanium salts such as titanium sulfate or potassium- titanium oxalate and made alkaline either by an ammonia treatment or by passing through sodium carbonate, thus saponifying and delustering at the same time.

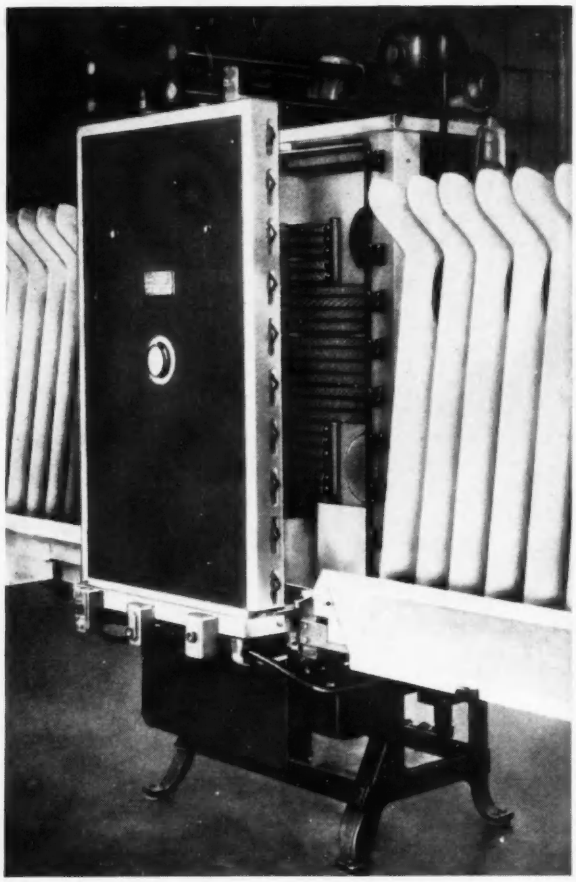
Other reference:

U. S. Pat. 2,046,305 proposes the use of aluminum soaps, dispersed in diglycol stearate for water repellent finishes.

The Annual "Patent Digest" Index Will Appear Shortly

TRADE NOTES • NEW PRODUCTS





Two views of the Turbo AD-48, the new dual-purpose machine for preboarding and finish boarding which is manufactured by the Turbo Machine Company, Lansdale, Pa., are shown above. On the left is the rear view showing the fan at the upper rear of the chamber, the air vent at lower center and the pressure reducing valve at the left. The photo on the right shows the steam coils inside the chamber which maintain a steady temperature during finish boarding. The air intake at the upper rear and the vent at the lower rear of the chamber are both sealed automatically during preboarding.
A news item on the Turbo AD-48 appeared on page 413 of the June 12, 1950 issue of AMERICAN DYESTUFF REPORTER.

• Wyandotte Purchases Pacific Plant

Purchase of the Pacific Chemical plant of the American-Marietta Company of Los Angeles, Calif., by Wyandotte Chemicals Corporation, has been announced by Robert B. Semple, president of Wyandotte.

Wyandotte reportedly will revamp the property immediately to provide a Pacific Coast manufacturing unit to serve Wyandotte branches which have functioned for a number of years in Los Angeles, San Francisco and Seattle.

Pacific Chemical's plant and sales personnel will be absorbed by Wyandotte's Pacific Division and the Wyandotte research and technical service staffs, numbering nearly 200 persons, will become available to users of Pacific Chemical products as well as to companies using Wyandotte products, it is reported.

Ford Ballantyne, Jr., vice president, George H. Schwarz, vice president and controller, Robert L. Reeves, general sales manager J. B. Ford Division, and other executives of Wyandotte Chemicals are handling the acquisition.

• O.T.S. Technical Reports

Use of an aluminum salt-wax emulsion to increase the wear resistance of fabrics is one of the Quartermaster Corps research studies reviewed in the June issue of the "Technical Reports Newsletter," now available from the Office of Technical Services, U. S. Department of Commerce.

Individual copies of the June "Newsletter" are available on request from the Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. or from U. S. Department of Commerce field offices.

Following is a partial list of *Textile Series* reports currently available to the public through O. T. S. Orders for mimeographed reports should be addressed directly to O. T. S., but photostats or microfilms may be purchased from the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

Order No.	(Tetile Series No.)	Author(s) and Title	Price, if available in Microfilm or Photostat	
PB 22337	3	"German Technical Developments in Textile Finishing Processes"—By Francis S. Richardson	$2.50	$15.00
PB 22338	4	"The Protection of Textiles and Related Products From Damage by Molds, Fungi, Insects and Flame"—By M. L. Crossley	.50	2.00
PB 23638	5	"Screen Printing"—by M. L. Crossley and Francis S. Richardson	.50	2.00
PB 22339	6	"The Microbiological Degradation of Cotton Fabrics"—By Ralph G. H. Siu and W. Lawrence White	1.00	5.00
PB 22340	7	"The Effect of Ultraviolet Light on Cotton Cellulose And Its Influence on Subsequent Degradation by Micro-Organisms"—By R. P. Wagner, Harold H. Webber and Ralph G. H. Siu	1.00	5.00
PB 27729	11	"The German Foam-Insulating Immersion Suit"—By Joseph P. Meierhans	1.00	2.00
	13	"Textile Microscopy in Germany"—Compiled by Werner Von Bergen. Published by the Textile Research Institute, 10 East 40th Street, New York, N. Y., and available from them at a price of $5.50 per copy.		
PB 75802	14	"Research Reports of the Zellwolle Lehrspinnerei (Berichte)"	4.00	13.00
PB 39562	18	"Supplementary Report on German Dyes"—By M. L. Crossley	2.00	4.00
PB 32510	19	"Dyestuffs, Intermediates, Textile Auxiliaries, Polymers and Pharmaceuticals"—By Joseph H. Trepagnier and Frederic T. Weishut	5.00	16.00
PB 27730	20	"The Textile Printing Industry in Germany" By Elliot Broadbent	2.00	5.00
PB 27732	21	"German Methods for Finishing Rayon Fabrics"—By Glenn D. Jackson, Jr.	2.00	5.00
PB 50758	22	"Observations on the Dyeing and Finishing Methods in Germany and Austria"—By C. Norris Rabold	3.00	8.00
PB 50759	23	"Package Dyeing in Germany, Dyeing of Hosiery in Germany," and other reports.—By Thomas R. Smith and Brackett Parsons	1.00	3.00
PB 86249	25	"Areas of Quartermaster Research In Textiles"—By Lt. Col. S. J. Kennedy, Capt. Richard D. Wells and Capt. Stanley Backer (Mimeographed: $2.00).		
PB 86250	26	"Determination of Statistical Control and Related Factors in the Performance of Breaking Strength Testing of Fabrics"—By Norman D. Edelman (Mimeographed: $.50)		
PB 86253	28	"Control of Factors Influencing Shade in Some Mills Manufacturing 20 oz. O.D. Suiting and 32 oz. O.D. Overcoating"—By L. DaCosta Ward	1.50	3.00
PB 86252	29	"Resin Impregnation of Cotton Fabrics for Prevention of Microbiological Decay"—By W. Lawrence White and Ralph G. H. Siu (Mimeographed: $.50).		
PB 80749	33	"Action of Alkali Upon Cellulose"—By Albert Schaeffer	2.00	6.00
PB 80750	34	"The Use of Acceptance Testing Data to Substantiate Specification Requirements"—By Stanley Backer	1.00	2.00
PB 97014	35	"Relationship Between Measurements of Air Permeability By The Gurley and Frazier Machines"—By Gerald Winston and M. I. Landsberg	1.75	2.50
PB 100362	36	"The Effect of Nondurable Aluminum Salt-Wax Emulsions on the Wear Resistance of Textiles"—By Seaman J. Tanenhaus and Mary E. Darby (Mimeographed: $.75)		
PB 99634	39	"Measurement of The Thermal Transmission of June 1948 Textile Fabrics"—By Stanley Backer and Gerald Winston (Mimeographed: $.50.		
PB 86256	44	"Report of the Committee for the Evaluation of German Dyestuffs"	7.00	48.00
PB 94004	45	"Report of The A.S.T.M. Task Group Studying The Wyzenbeck Precision Wear Test Meter"—By S. Tanenhaus and Gerald Winston	2.00	3.75
PB 81823	46	"The Treatment of Army Socks for Shrink Resistance"—By the Staff of the Quartermaster Corps Laboratory and the Research Laboratories. (Mimeographed: $1.50).		
PB 95955	50	"Second Report of A.S.T.M. Task Group Studying The Wyzenbeck Precision Wear Test Meter"—By S. J. Tanenhaus and Gerald Winston	2.25	5.00
PB 99531	51	"Correlation of Simulated Rainfall Tests With Laboratory Tests"—By M. I. Landsberg, Roger Kelly and Dorothy Sinski (Mimeographed: $.75).		
PB 94501	53	"Quartermaster Accelerated Test Method for Evaluating Shrink Resistant Wool as Developed for 10½-ounce Wool Shirting"—By Louis I. Weiner	2.00	3.75
PB 98014	54	"An Improved Multipurpose Abrasion Tester and Its Application for The Evaluation of The Wear Resistance of Textiles"—By R. G. Stoll (Mimeographed: $1.25).		
PB 110059	55	"A Study of Some Form Factors Affecting The Shrink Resistance of Wool"—Submitted by Harris Research Laboratories (Mimeographed: $1.00).		
PB 98574	57	"Factors Affecting the Relaxation Shrinkage of Knit Underwear Tubing"—By Louis I. Weiner (Mimeographed: $.75).		
PB 99530	58	"Identification of Organic Dyestuffs by X-Ray Powder Diffraction"—By George V. Susich (Mimeographed: $.50).		

Arthur S. Davis

• Davis Joins H-D Sales Staff

Arthur S. Davis, formerly superintendent of the American Waterproofing Company, Cincinnati, has joined the textile dyestuffs sales staff of the Hilton-Davis Chemical Company Division, Sterling Drug Inc., Nelson S. Knaggs, vice-president in charge of sales has announced. Mr. Davis is currently assigned to the headquarters plant awaiting field assignment.

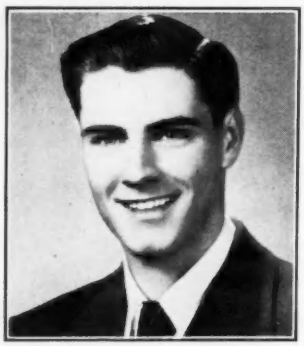
A graduate of the Lowell Textile Institute in 1940, Mr. Davis has previously been associated with the Ciba Company Inc., the Calco Chemical Company, Bound Brook, N. J., Kenwood Mills, Rensselaer, N. Y., and the Barbour Mills, Brockton, Mass. He came to Cincinnati in 1947 to work for the Proctor & Gamble Company. He is a member of the American Association of Textile Chemists and Colorists.

• Engineering Properties of Nickel Alloys

Two essentially new technical bulletins on the properties of high nickel alloys have been issued by The International Nickel Company, Inc., 67 Wall St., New York 5, N. Y. Both are twenty-four pages in length and contain charts, tables on compositions and properties, working instructions, and other information of a technical nature. The bulletins represent to some extent, more extensive revisions of earlier bulletins on the same subjects.

Technical Bulletin T-7, one of the two, is entitled, "Engineering Properties of Inconel". In addition to information on Inconel, it contains material on Inconel "X", one of the newer age-hardenable Inco nickel alloys:

The second publication is Technical Bulletin T-9 and deals with the engineering properties of "K" Monel and "KR" Monel. Both are available without charge through the Technical Editor of The International Nickel Company, Inc.



John A. Patterson

• Patterson Wins Stroock Scholarship

S. Stroock & Co., Inc., has announced that John A. Patterson is the winner of the firm's two year scholarship for 1950-52 in Textile Technology at the State Institute of Applied Arts and Sciences, Division of State University of New York.

John A. Patterson is employed in the Dye Department of the Stroock Mills in Newburgh, N. Y. His father, Arthur N. Patterson is Chief Chemist of the Stroock Mills and a member of the A.A.T.C.C.

• Production of Surface-Active Agents Increasing

The United States Tariff Commission has released preliminary statistics on United States production and sales of surface-active agents in 1949. This report is the fifth of a series giving preliminary statistics on 1949 production and sales of synthetic organic chemicals. The report gives statistics arranged according to chemical classes.

The total output of surface-active agents in 1949 was 426 million pounds, the largest output of these products on record. Sales in 1949 amounted to 335 million pounds, valued at 82.8 million dollars, compared with 275 million pounds, valued at 87.9 million dollars in 1948.

Production in 1949 of cyclic surface-active agents amounted to 223 million pounds as compared to 176 million pounds reported for 1948. Sales of cyclic surface-active agents in 1949 were 174 million pounds, valued at 33.7 million dollars, compared with 131 million pounds, valued at 34.5 million dollars, in 1948. Production in 1949 of acyclic surface-active agents amounted to 202 million pounds, an increase of 2 percent from the previous year. Sales of acyclic products in 1949 were 161 million pounds, valued at 49 million dollars, compared with 144 million pounds, valued at 53 million dollars, in 1948.

Combined production of cyclic and acyclic sulfated and sulfonated (anion-active) surface-active agents in 1949 was 379 million pounds or about 90 percent of the total output of surface-active agents as a group. Other important groups of products produced in 1949 were the cyclic and acyclic polyhydric alcohol esters and ethers, the combined production of which totaled 29.6 million pounds, and the cyclic and acyclic group of nonsulfonated nitrogen-containing compounds (chiefly cation-active materials), production of which totaled 15.6 million pounds in 1949.

The preliminary statistics on production and sales of surface-active agents are more than 95 percent complete. The complete statistics will be given in the Commission's final report which will be issued later.

Copies of the section on surface-active agents may be obtained by writing to the United States Tariff Commission, Washington 25, D. C.

• Initial RAC Meeting Since Consolidation

The first meeting of the Research Advisory Committee of the Textile Research Institute, Inc. since the consolidation of the functions of the Institute and The Textile Foundation was held on Friday, June 2, 1950, at the Institute Laboratories in Princeton, New Jersey. In keeping with the spirit of this consolidation the Textile Research Institute invited the former members of The Textile Foundation Committee on Scientific Research to the membership of the Institute Research Advisory Committee. The meeting of this committee in Princeton marked the first time that a single committee, composed of both Institute advisers and former Foundation advisers, has convened to discuss the entire research program at the Princeton Laboratories.

The following members of the Committee attended this all-day meeting: Dr. Miles A. Dahlen, Assistant Director, Dyestuffs Division, E. I. du Pont de Nemours & Company, Inc., Chairman of the Committee; William D. Appel, Chief, Textiles Section, National Bureau of Standards; Werner von Bergen, Director of Research, Forstmann Woolen Company; Dr. Joseph H. Brant, Director of Research, Bates Manufacturing Company; G. K. Lake, Director of Research, Pepperell Manufacturing Company; Dr. H. Y. Jennings, Director of Research, Dan River Mills; Dean Hugh S. Taylor, Graduate School, Princeton University; Dr. R. Y. Winters, Assistant Director, Agricultural Research Administration, U. S. Department of Agriculture.

Dr. John H. Dillon, Director of Research of the Textile Research Institute, Inc., who was recently granted the honorary degree of Doctor of Science at Ripon College opened the meeting and described the organizational changes which have been put into effect as a result of the transfer of responsibilities by the Foundation to the Textile Research Institute. He then described the progress of the Institute's general research program and special projects, including the Dyeing Project and the Wool Research Project. The general research program conducted by The Textile Foundation is now being supervised by Institute personnel.

Dr. James H. Wakelin discussed the recent results on the Wool Research Project, a cooperative program conducted both at the Institute's Laboratories in Princeton and at the Forstmann Woolen Company, Passaic, New Jersey. Dr. Helmut Wakeham gave a brieg review of single fiber research on cotton in which the physical properties and factors affecting strength have been compared among a number of leading varieties of cotton. Dr. Howard J. White, Jr., discussed the use of radio active tracers on the Dyeing Project for studying the mechanism by which a fiber absorbs salts and dye molecules from a dye bath. Professor Eugene Pacsu reviewed for the Committee the recent work of his group on the structure of starch and cellulose. This work, formerly under the guidance of the Foundation, has been transferred to the supervision of the Textile Research Institute, Inc.

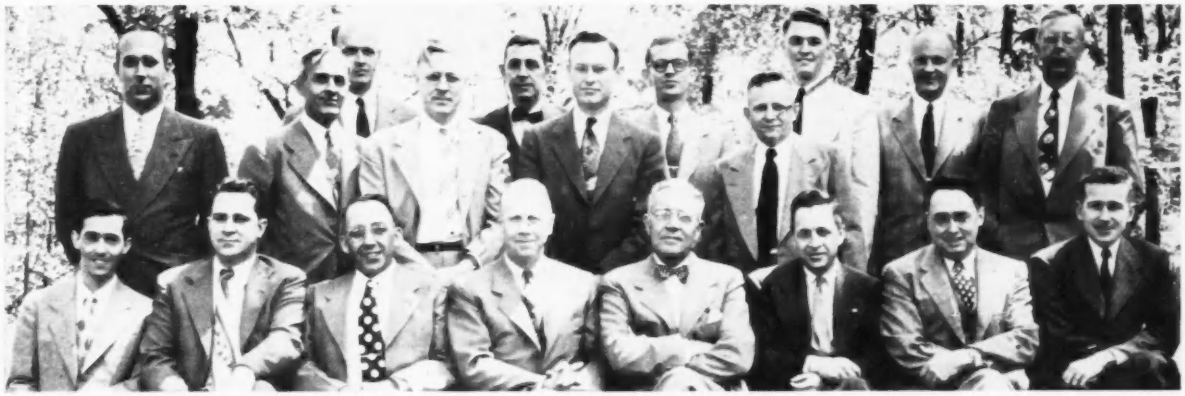
• Bondsville Print Works Opens

The opening of the Bondsville Print Works, Inc. in Bondsville, Mass. (formerly West Warren Print Works, Inc.) has been announced by Edward Endelson, president of the new firm.

Remodeling, modernization, and reorganization of the West Warren Print Works have, according to the management, rendered the resultant Bondsville Print Works, Inc. the best equipped, most modern, and one of the largest screen printing plants in the world.

The plant is reported to presently include 21 heated printing tables, each 90 yards long and 60 inches wide, on two printing floors occupying approximately 150,000 square feet. The table surfaces are both "soft top" and wax for precision printing. Complete aging, steaming, washing, and finishing equipment is on the premises for commercial or vat colors on all fabrics. Both application and discharge printing will be done on cottons, silks, wools, rayons and other synthetic fabrics.

The Bondsville Print Works, Inc. New York office will be at 145 West 41st Street.



Members and Guests of the Research Advisory Committee for the Dyeing Project of the Textile Research Institute, Inc.

BACK ROW: (left to right)—H. F. Kilguss, Apponaug Company; P. J. Choquette, Am. Assoc. of Textile Chem. & Colorists; H. J. White, Jr., Textile Research Institute; S. S. Rossander, E. I. DuPont de Nemours Co.; E. W. Lawrence, Cranston Print Works Company; R. J. Andres, E. I. DuPont de Nemours Co.; K. L. Turner, Textile Research Institute; E. W. Rhael, Sandoz Chemical Works, Inc.; P. B. Stam, Textile Research Institute; J. H. Wakelin, Textile Research Institute; and H. D. Evans, Pepperell Manufacturing Co.

FRONT ROW: (left to right)—A. F. Cacella, Textile Research Institute; J. M. Straley, Tennessee Eastman Corporation; K. T. Schaefer, North American Rayon Corp.; J. H. Dillon, Textile Research Institute; H. S. Lubs, E. I. DuPont de Nemours Co.; J. Woodruff, American Viscose Corporation; Fred Traut, Globe Dye Works Company; and W. S. Barnard, Textile Research Institute.

• Dyeing Project Committee Meeting

Members and guests of the Research Advisory Committee for the Dyeing Project of the Textile Research Institute, Inc., met in Princeton on May 22, 1950. Dr. John H. Dillon, Director of Research, presided and Drs. J. H. White, Jr. and P. B. Stam discussed technical developments of the work.

It was brought out at the meeting that radioactive tracer techniques have been successfully used for the first time in tracing the movement of salts and dyes within individual fibers. Data were presented following three independent components of the dye bath simultaneously.

No attempt has been made as yet to evaluate the results, pending the accumulation of more complete data. However, it is expected that in the next six months to a year considerable progress will be made toward understanding what goes on within a fiber in a dye bath. It may even prove possible to measure semi-quantitatively the distribution of the dye within the fiber using radioactive tracers, it is reported.

The Institute is now working on the synthesis of "tagged" acetate dyes and direct dyes for cellulose having successfully synthesized a "tagged" acid dye for wool.

• Chemical Industry Medal to Rand

William M. Rand, President of the Monsanto Chemical Company, St. Louis, Missouri, has been chosen to receive the Chemical Industry Medal for 1950, according to an announcement made May 29 by the American Section of the Society of Chemical Industry, donor of the medal. The medal will be formally presented to Mr. Rand at a meeting of the Section following a dinner in his honor at the Starlight Roof of the Waldorf-Astoria, New York, N. Y., on November 3, 1950.

The Chemical Industry Medal was established in 1933 and is awarded annually in recognition of conspicuous services to applied chemistry. Mr. Rand, who is also president of the Manufacturing Chemists' Association, was elected to receive the medal by the Executive Committee of the American Section of the Society of Chemical Industry sitting as the Committee of Award.

Dr. Gustavus J. Esselen, consulting chemist of Boston, and Chairman of the American Section, will preside at the award meeting, and Dr. A. J. Weith, of the Bakelite Division of Union Carbide & Carbon Corporation, New York, and immediate past chairman of the American Section, will present the medal.

Mr. Rand will be the seventeenth recipient of the Medal. Previous medallists were: J. G. Vail, F. J. Metzger, E. R. Weidlein, W. S. Landis, E. J. Crane, J. V. N. Dorr, R. E. Wilson, E. K. Bolton, H. E. Howe, J. J. Grebe, Bradley Dewey, S. D. Kirkpatrick, W. H. Dow, G. W. Merck, J. A. Rafferty and W. B. Bell.

The Society of Chemical Industry, founded in 1881 in England, is international in scope. Its American Section, formed in 1894, was the first chemical society in the United States to bring together those interested in industrial chemistry. It is today the only active American section of an international scientific society.

The American Section has furnished six presidents of the parent society including Professor Charles F. Chandler, Dr. William H. Nichols, Professor Ira Remsen, Professor Marston T. Bogert, Dr. Arthur D. Little and Dr. Wallace P. Cohoe. It has been active in fostering the development of industrial chemistry and promoting Anglo-American relations in this important field. Other sections include several in England as well as in Canada, Edinburgh, Glasgow, Northern Ireland and Australia.

• Two New Acid Colors Added by Hilton-Davis

Two new acid colors have been added to the line of textile dyestuffs being offered by the Hilton-Davis Chemical Company Division of Sterling Drug Inc. They are Hidacid Fast Fuchsine 6 B Concentrated (C. I. 57) and Hidacid Fast Red Concentrate (C. I. 175).

• Cotton Fiber Testing Booklet

A booklet, "Cotton Quality Control Through Cotton Fiber Testing", has been prepared by the United States Testing Company, Inc., according to an announcement by the Memphis Laboratory located at 198 South Main Street, Memphis, Tennessee. The booklet describes methods and equipment used in conducting tests on cotton for Pressley strength, Fibrograph length uniformity, Micronaire fineness, and maturity.

Copies of this booklet can be obtained by writing to the main laboratories in Hoboken, New Jersey, or the Memphis Laboratory.

• New Method of Hydrogen Peroxide Production

A new method for the production of hydrogen peroxide and a scheme for determining the distribution of dissolved oxygen in river water were announced recently by three Washington State chemists at the Pacific Northwest Regional Meeting of the American Chemical Sociey.

The new hydrogen peroxide process makes use of large amounts of waste hydrogen, produced as a by-product of the electro-chemical industry, and oxygen readily obtained from air, according to a paper presented by Dr. G. L. Putnam and J. F. Sullivan of the University of Washington.

The method involves the mixing of about twenty parts of hydrogen gas with one part of oxygen, heating to the proper temperature and passing through the mixture an alternating electric current at 5,000 to 15,000 volts.

Hydrogen peroxide is widely used for bleaching in the textile industry. Its use is said to make possible high efficiency and to reduce waste disposal difficulty.

"About 15 kilowatt hours of electrical energy are required per pound of hydrogen peroxide," it was stated, "but it is believed that recently developed 'phosphate' type glass equipment will greatly lower the energy requirement".

• ACC Appointments

American Cyanamid Company has announced the appointment of Dr. Elmore H. Northey as Assistant to Dr. Robert C. Swain, Vice President of the Company in charge of research and development. The Company also announced the appointment of Dr. Jack T. Thurston as Administrative Director of its Stamford Research Laboratories, and Dr. Joseph H. Paden as Director of the Research Division of the Laboratories. All appointments were effective June 1, 1950.

Dr. Northey has been Administrative Director of the Laboratories since 1945. He joined the Calco Chemical Division of American Cyanamid Company in 1932.

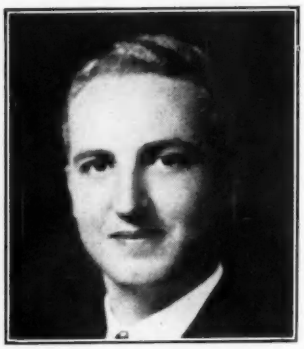
Dr. Thurston has been Director of the Research Division of the Stamford Laboratories since 1945. He joined the Laboratories in 1937.

Dr. Paden also joined American Cyanamid in 1937.

• Stein, Hall Appointments

Two recent appointments by Stein, Hall & Company, Inc. have been announced by Morris S. Rosenthal, President.

Leonard F. Costello is the new Manager of the Textile Department of the Sales Division. He joined Stein, Hall in 1940. In 1948 he was given the assignment of creating and building Stein, Hall's Latex Products Department.



Leonard F. Costello

Norman Nuttall has been appointed Assistant Technical Director. Mr. Nuttall went with Ciba Company's New York Dyestuff Lab. after his graduation from college in 1938. He joined Stein, Hall in March 1940 and after holding several different positions in the Company was made Manager of the Textile Department in March 1949.

Norman Nuttall

• Hyatt Award to Powell

The John Wesley Hyatt Award for distinguished achievement in plastics was presented June 1 to George M. Powell, III, technical head, Vinyl Coatings Research, Union Carbide and Carbon Corporation, South Charleston, West Virginia.

The Honorable John W. Snyder, Secretary of the Treasury, gave the presentation address. Waldemar Kaempffert, science editor, New York Times, and a member of the John Wesley Hyatt Award Committee, made the award, a gold medal and one thousand dollars in cash, at a banquet at the Hotel Pierre. A group representing the merchandising, banking, plastics, and chemical fields attended the ceremony.

The award was presented to Mr. Powell for his work in planning and directing the development, formulation and application of Vinylite dispersion resins.

Charles A. Higgins, president of Hercules Powder Company described the rapid growth of the plastics industry, and also the contribution of small business to that growth.

Dean Richard F. Bach, Metropolitan Museum of Art in New York, served as toastmaster.

Mr. Powell is the recipient of the ninth John Wesley Hyatt Award, of which Hercules Powder Company is the patron. The award was named to commemorate John Wesley Hyatt, "the father of the plastics industry." It was Hyatt's work with cellulose nitrate and camphor, in 1867, which resulted in the making of the first thermoplastic, celluloid.

The award has been presented annually since 1941 to the person judged by the Hyatt Award Committee to have made an outstanding contribution to the plastics industry during the preceding year.

The conditions which govern the selection of medalists are: the practicability of the achievement, its effect upon the plastics industry, its probable future value, and its degree of originality.

Previous winners include: Dr. Donald S. Frederick, Rohm & Haas Co.; Frank Shaw, Shaw Insulator Company; Dr. Stuart D. Douglas, Carbide and Carbon Chemicals Corp.; William Iler Beach, North American Aviation, Inc.; Virgil E. Meharg, Bakelite Corp. and Paul D. Zottu; Dr. John J. Grebe, Dow Chemical Company; John D. Cochrane, Jr., The Formica Company, and Dr. George T. Felbeck, Carbide and Carbon Chemicals Corp.

Members of the award committee are: Horace Gooch, Jr., president, Society of the Plastics Industry, Inc.; Dr. Charles F. Kettering, vice president, General Motors Corporation; Dr. Ernest Volwiler, president, American Chemical Society; Dr. Edward R. Weidlein, director, Mellon Institute of Industrial Research; Dean Bach; Dr. Felbeck and Mr. Kaempffert.

• Dehumidification Bulletin

"A Few Facts About Dehumidification for Industry", a new bulletin by Abbeon Supply Co., 58-10 41st Drive, Woodside, N. Y., has been made available without charge to our readers.

The bulletin deals with problems of *high* humidity such as mold, rust, mildew, etc. Methods of removal of moisture from the air are dealt with and some humidities for specific processes are recommended. Descriptive material on Abbeon's Heavy Duty Dehumidifier Model ACR 3 is also included.

• King Joins Heyden

Heyden Chemical Corporation of New York, N. Y. has announced the appointment of Douglas J. King to position of Assistant to Q. S. Ball, Manager of the Professional Products Division.

Mr. King has had experience in the drug and pharmaceutical industry qualifying him for this position in the sales and merchandising of Heyden penicillin and streptomycn, antibiotics produced in Heyden's modern Princeton, N. J. plant.

• Hunter Opens Southern Sales Office

James T. Hunter, company president of James Hunter Machine Company, has announced the opening of a Southern branch sales office, located at 1734 Candler Building, Atlanta 3, Georgia.

Hunter's new sales office will be under the direction of Carl Eudlein, who will operate as sales engineer throughout the Southeastern states. From 1932 to 1945, Mr. Eudlein was Southeastern Divisional Manager in charge of Textile Instrumentation and Controls for the C. J. Tagliabue Company. From 1945 to date he has operated as a consulting textile engineer, planning drying and extracting installations for the cotton, rayon and woolen industries.

• NBTI Homecoming Weekend

The New Bedford Textile Institute Alumni Association was again the sponsor of the annual homecoming weekend celebration of May 26-29, 1950. Opening with registration and class reunions in the Alumni Rooms at the New Bedford Hotel on Friday, May 26, the activities continued with the Alumni Business Meeting in the morning and the Cape Cod Clambake at Dan's Pavilion on Saturday afternoon.

At the annual business meeting on Saturday, the Association elected the following officers:

President—Harold B. Sturtevant, Rhode Island School of Design, Providence, Rhode Island.

First Vice-President—Joseph Dawson, Knowles Loom Reed Works, Inc., New Bedford, Mass.

Second Vice-President — Edward L. Murphy, Brown-Durrell Co., Cambridge, Mass.

Third Vice-President—George Hotte, A. M. Tenney Associates, Inc., New York, N. Y.

Secretary—James L. Giblin.

Assistant Secretary—Frank Holden.

Treasurer—Francis Tripp.

Assistant Treasurer—Louis E. F. Fenaux.

The last four officers are all members of the New Bedford Textile Institute Faculty.

A baseball game, N.B.T.I. vs. Quonsett N.A.S. was the major event Sunday.

The annual golf tournament was played in the rain on Monday at Paskamansett. The day closed with the Alumni "Stag Banquet" at the New Bedford Hotel in the evening.

• Fast Dyeing Method for Synthetic Polymide Fibers

G. W. Krentler, President of Dean and Sherk Company, Incorporated, Thread Manufacturers of Lawrenceburg, Kentucky, a division of American Yarn and Processing Company, Mount Holly, North Carolina, has announced the development of a successful fast dyeing method for light and heavy shades in Nylon, Acrylic Orlon, Fiber V and other hydrophobic or synthetic fibers.

The method of dyeing synthetic polymide fibers with hyperthermalized liquid dyebath under pressure has been developed by A. P. Roy, Director of Research for Dean and Sherk Company, in conjunction with George Hacker of the Gaston County Dyeing Machine Company, Stanley, North Carolina, who manufactured the equipment used in the process. According to Mr. Krentler, application for patent covering the method and the equipment has been filed in the U. S. and foreign countries with an assignment by Messrs. Roy and Hacker to Dean and Sherk Company.

Mr. Krentler states further that when the hydrophobic or synthetic fibers are available in larger quantities, license to use this method may be granted to manufacturers other than American Yarn and Processing Company and its subsidiaries.

• Large Attendance Anticipated at Canadian Textile Seminar

H. C. Mersereau, Secretary-Treasurer for the 1950 Canadian Textile Seminar, which is set for September 15-16 at Queen's University, Kingston, Ont., has announced his anticipation of a large attendance.

Among the papers to be presented are several of interest to the wet processing field. Under the division of Dyeing, Printing & Related Processes of Cotton & Man-Made Fibers will be the following: "The Application of Pigments in a Textile Print Works"—J. B. Connor, Dominion Textile Co. Ltd., Magog, P. Q.; "The Principles of Textile Finishing"—Emery I. Valko, Polytechnic Institute of Brooklyn; "Dyeing & Finishing of Acetate Warp Knit Fabrics"—T. H. Hilliard, Canadian Celanese Ltd., Drummondville & Sorel Plants; "Trends in Dyeing and Finishing Machinery"—C. C. Wilcock, Courtaulds Ltd., Bocking, England; "Properties of Starches and Dextrines"—Dave McGill, Stein-Hall Ltd., Toronto, Ont. and "Package Dyeing with Particular Reference to Barber Colman Cheeses"—T. H. Jackson, Canadian Cottons Ltd., Cornwall.

In the division of Woolen Dyeing & Related Processes, the following will be presented: "Physics and Chemistry in Wet and Dry Finishing of Face-Finished Woolen Fabrics"—Werner von Bergen, Forstmann Woolen Co., Passaic, N. J.; "Acid Dyeing"—P. Larose, National Research Council, Ottawa, Ont.; "Washable Woolens"—E. C. Dreby, Scholler Bros. Ltd., Philadelphia, Pa. and St. Catherine, Ont. and "Sequestering Agents in Wool and Cotton Dyeing"—Henry E. Millson, Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J.

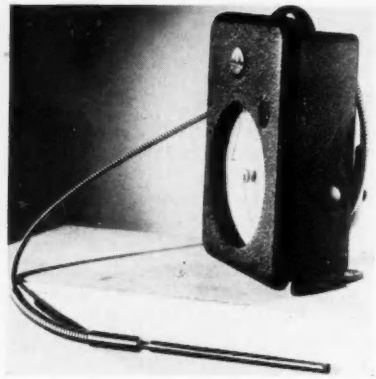
Information and registration is being handled by H. C. Mersereau, Nylon Division, Canadian Industries Ltd., Kingston, Ontario.

• "Dripless" Dyehouse Truck

A convex floor that drains the drip to the sides, where openings allow it to fall into a gutter inside the walls of the truck, features the new stainless steel dye house truck manufactured by Glasco Equipment Co., 2 Wait Street, Paterson, N. J. From this gutter the drip is reportedly carried to a central point under the truck where it is reportedly discharged well inside the perimeter of the bottom of the truck. The result is that drip does not fall on the feet of the truck operator.

Wet feet from drip is a frequent cause of discomfort and an occupational risk, because it creates an unsanitary condition. To avoid this drippage workers stand clear of ordinary trucks and throw goods into the truck, which often results in soiling or other damage to the fabrics. This fault has now been recognized for the first time in dye house truck design, it is stated.

Glasco S. S. Dye House Truck



Gotham Chart Recorder

• 6″ Convertible Chart Recorder

Recording temperatures and pressures under a variety of changing conditions can be accomplished with a new 6″ chart Recorder, according to Gotham Instruments Division of American Machine and Metals, Inc., 149 Wooster St., New York 12, N. Y., manufacturers of the instrument. The unit measures 8-⅜″ x 10-⅛″ x 3-¾″, and weighs 7½ pounds, not including the tubing. Temperature and pressure systems are reported interchangeable and changes in range of temperatures or pressures recorded can be made from 40° to 1000° F. and from 0 to 5000 psi., it is stated.

The mounting brackets furnished are reversible so that the recorder may be flush or wall mounted. Legs and handles are available to make the recorder portable and self-standing.

The bulb of the instrument is supplied with mercury, gas or vapor filling according to use. Size of the bulb depends upon the filling and the length of tubing actuated.

• Devereaux Elected to Wool Bureau Post

Harry J. Devereaux, Rapid City, South Dakota, President of the American Wool Council, was elected Chairman of the Board of Directors of The Wool Bureau, Incorporated, at a Special Meeting of the Board held Wednesday, June 7 at the Bureau's offices, 16 West 46th Street, New York, N. Y.

At the meeting, the Directors reviewed results achieved by the Bureau's merchandising, research and education programs in its first year of operations in the United States and Canada.

Douglas T. Boyd, of Australia, retiring chairman, stated that he considered The Wool Bureau to be "one of the most successful ventures in international cooperation. Its fine progress has been due solely to the spirit of team work shown by all parties, and I have complete faith in the continuation of the Bureau's work in behalf of wool."

Reginald G. Lund was appointed to the Bureau's Executive Committee succeeding Earl Newsom. Mr. Lund is Chairman of the International Wool Secretariat, London, and New Zealand member of that body. F. Eugene Ackerman continues to serve as Chairman of the Executive Committee.

The Wool Bureau's promotional program in the United States and Canada is supported by the American Wool Council, representing American wool interests, and the International Wool Secretariat, representing wool growers of the British Dominions. The Bureau's Board of Directors includes: Harry J. Devereaux, Chairman; Reginald G. Lund; Douglas T. Boyd; L. F. Hartley; Earl Newsom; J. Byron Wilson; F. Eugene Askerman and W. F. Fitzgerald, President of The Wool Bureau, Inc.

• F.I.T. Commencement Exercises

David Dubinsky, President of the International Ladies' Garment Workers' Union, was honored with the 1950 Art and Industry Award of the Educational Foundation for the Apparel Industry for distinguished service to the Fashion Industries, at the commencement exercises of the Fashion Institute of Technology on June 20 in the Auditorium of the College at 225 W. 24th Street, New York, N. Y.

Robert L. Huffines, Jr., President of Burlington Mills, was guest speaker from industry and Dr. Lewis A. Wilson, State Commissioner of Education spoke on behalf of Education.

Management, Labor and Education were also represented at the Annual Board of Directors' Meeting held at the College preceding the exercises. Contributions to the Education Fund were announced by representatives of the Glove Industry, International Ladies' Garment Workers' Union, National Authority for the Ladies Handbag Industry, United Infants' and Children's Wear Association, Millinery Stabilization Commission, National Coat and Suit Recovery Board, Administrative Board of the Dress Industry and others.

• Lime Scale Deposition Prevention

Prevention of lime scale deposition by "threshold treatment" of the water with Calgon is described in a new folder offered by the manufacturer, Calgon, Inc., Pittsburgh, Pennsylvania. Calgon, a vitreous sodium phosphate, is dissolved and the solution is added continuously to the water, effective concentrations ranging from about 1 to 10 parts Calgon per million of water, it is stated. Slightly higher concentrations are said to have proved effective in eliminating deposition of other scale-forming salts. Typical applications of threshold treatment are cited, including prevention of lime scale deposition in boiler feed water lines, caustic and hypochlorite bleaching in paper mills, water heating, recirculating cooling systems, multiple-effect evaporators, and after-precipitation following lime-soda softening.

• Cyanamid Appointments

The Industrial Chemicals Division of the American Cyanamid Company has announced the appointments of Dr. A. J. Weith, Jr. and J. F. Allen as technical service representatives of the Synthetic Organic Chemicals Department.

Dr. Weith joined Cyanamid in 1947 and has worked in the Stamford Research Laboratories.

Mr. Allen was with Devoe & Raynolds Company, Inc. for four years prior to joining Cyanamid in 1950.

• Research Administration Bibliography

Arthur D. Little, Inc., chemists and engineers, Memorial Drive, Cambridge 42, Mass. have announced the availability without charge of a carefully selected bibliography of books and articles on "Management of Industrial Research".

Contents of the bibliography include an introduction, general references and background for books and periodicals, sections on organization, control, research programs (technical and technical-economic) and research laboratories, a miscellaneous section, a subject index and a periodical abbreviation key.

• Fungistat Bulletin

An eight-page illustrated bulletin, describing laboratory and field studies of paradichlorobenzene as a volatile fungistat, is available from Monsanto Chemical Company, St. Louis 4, Mo.

The chemical, used in mothproofing and other applications, was found to be an effective agent for the control of mildew when properly use. It is recommended by the company for both industrial and home use.

In addition to properties and specification of paradichlorobenzene, the bulletin includes a summary of previous work, use recommendations and a bibliography.

• New GDC Circulars

General Dyestuff Corporation, 435 Hudson St., New York 14, N. Y. has released two new circulars. G-647 deals with Diazo Brilliant Scarlet BAL Extra CF and Diazo Brilliant Scarlet ROL Extra CF. G-648 contains information on Diamine Catechine ER-CF.

Excerpts from the circulars follow:

"Diazo Brilliant Scarlet ROL Extra CF is a straight dyestuff which is now manufactured to take the place of the formerly imported corresponding diazo type. Upon development it gives bright dischargeable scarlet shades of good tinctorial value.

"Diazo Brilliant Scarlet BAL Extra CF is a closely related brand that is so nearly identical in all its properties that it also is included here. The shade of Diazo Brilliant Scarlet BAL Extra CF is distinctly bluer than that of the ROL Extra CF and corresponds to that of the formerly imported type of the same name.

"These dyestuffs are suitable for application to cotton, rayon and other vegetable fibers and also to silk, by the usual dyeing methods, followed by diazotization and then development with Developer AMS or Beta Naphtol for the production of bright scarlet shades with good(3) fastness to washing, fair(3) fastness to light and very good dischargeability. The bright medium scarlet shades of these patented diazo dyestuffs fill an important place among those colors for cotton and rayon that are at the same time dischargeable and reasonably fast to washing.

"The scarlet shades obtainable with Diazo Brilliant Scarlet BAL Extra CF and ROL Extra CF are little affected in shade and fastness to light by aftertreatment with urea-formaldehyde-resin and melamine-formaldehyde-resin anticrease finishes, and at the same time the wet fastness is slightly improved. Excellent fastness to perspiration, crocking and hot pressing, taken in conjunction with very good dischargeability, thus make these dyestuffs particularly suitable for solid shades and white and colored discharge effects on rayon dress goods that are to be given an anticrease finish. They are also suitable for children's hosiery, knitted sportswear and rayon linings.

"The virtual freedom of these products from copper and manganese permit their use on rainwear and footwear that are to be rubberized."

"Diamine Catechine ER-CF is a new straight dyestuff developed to supplement the line of Catechine types. It is recommended primarily for dyeing cottons, rayon and other cellulose fibers, on which it produces rich reddish-brown shades. These shades are much redder than those obtained with our older Diamine Catechine 3GA-CF. On rayon the shade of this new noncompetitive dyestuff is quite close to Henna (70162) in the color catalog of the Textile Color Card Association.

"The fastness to washing and the fastness to light of dyeings of the new ER brand are distinctly better than those of our older Catechine types, the fastness to washing being poor to fair (1-2) on cotton and fair to good (2-3) on rayon, while the fastness to light on cotton is fair (3) but on rayon is very good (6). The fastness to light on rayon is unaffected by either a melamine-formaldehyde or a urea-formaldehyde anticrease finish, whereas the fastness to washing is slightly and distinctly improved, respectively. Aftertreatment with copper sulfate and acetic acid improves the light fastness on cotton and rayon considerably, changing the ratings from fair (3) to fairly good (4) on cotton and from very good (6) to very good to excellent (6-7) on rayon.

"Diamine Catechine ER-CF is recommended both as a self shade and as a shading color for various cotton and rayon fabrics and also for union fabrics containing cotton or rayon. The resistance of its dyeings to resin finishing makes it especially useful for coloring mercerized cotton and rayon knit goods and rayon piece goods that receive an anticrease finish and are to be dry-cleaned. For rayon hosiery containing mercerized cotton in the feet, Diamine Catechine ER-CF is particularly advantageous in that it dyes the cotton and rayon tone-in-tone under the conditions usual in hosiery dyeing. Union materials containing wool and cotton or rayon are conveniently dyed to a solid shade by the use of a little neutral-dyeing acid color to tone up the wool. Estron (acetate) effect threads in unions are distinctly stained by the new Catechine. Diamine Catechine ER-CF is particularly useful for dyeing mercerized cotton and linen sewing threads from the view point of both economy and convenience when fair fastness to light and to washing is adequate.

"Diamine Catechine ER-CF is a nondusting type of direct dyestuff, which dissolves to the extent of about 4 ozs. per gallon at 120° F. It is thus well suited for application in circulating pressure machines on rawstock and yarns as well as in other dyeing equipment. It exhausts at a medium to fairly rapid rate from 150° F. to the boil, and at the same time levels fairly well (2), the exhaustion being readily controllable with salt. Aftertreatment with copper and acetic acid for improvement of light fastness makes the shade slightly bluer and fuller; chrome or formaldehyde and acetic cause no further change in shade or fastness.

"Although only very light dyeings of this product can be satisfactorily (3) discharged for white effects, full shades can be employed for colored discharges.

"As a CF type virtually free from copper and manganese, Diamine Catechine ER-CF is suitable for use on textiles that are to be rubberized."

• Powers Elected ACC Vice President

American Cyanamid Company has announced the election of E. D. Powers as a Vice President. He will be in general charge of all matters concerning plant operations, including related activities of staff departments.

Mr. Powers has been with American Cyanamid since 1918 and has served in many capacities with several divisions of the Company. Prior to his election as a Vice President, he had been Production Manager.

• Brown Nominated A.S.M.E. President

J. Calvin Brown, of Los Angeles, Calif., owner of the firm bearing his name in that city, has been nominated as the 1951 president of The American Society of Mechanical Engineers, it was announced on June 26. Mr. Brown heads a slate of new ASME officers, including four regional vice presidents and two directors-at-large, submitted by the society's nominating committee. Since only one name is presented for each office, nomination is tantamount to election.

Formal election will take place in the Fall by letter ballot of the membership, which totals more than 32,000 engineers. The new officers are to begin their terms at the conclusion of the ASME annual meeting in New York next December.

• Recording Thermometer Bulletin

The Bristol Company, Waterbury 20, Conn., has published a 44 page bulletin giving information on its "Series 500" line of thermometers. Liquid-filled, vapor pressure, and gas-filled types are described in models for recording, indicating, controlling, and telemetering of temperatures. Each of the types of thermometers is fully described, with information given on operating principles, characteristics of operation, temperature sensitive bulbs, recording charts, and accessories. Resistance type thermometers, humidity instruments, and time-temperature controllers are also described. In addition to numerous photographs, the bulletin is illustrated with reproductions of actual temperature chart records and sketches of applications to enhance its value as a handbook of industrial thermometry. Ask for Bulletin T840.

Correction

On page 441 of the June 26 issue of REPORTER a notice of new prices as of July 1 on soda ash, chlorine and caustic soda products of the Solvay Sales Division of Allied Chemical & Dye Corporation appeared.

The prices shown for the four items of liquid caustic soda were not increased on July 1st but will remain as follows:

	Per 100 lbs.
50% Liquid Caustic Soda, seller's tank cars, basis 76%	$2.40
50% Liquid Caustic Soda, Rayon Grade, seller's tank cars, basis 76%	2.50
70-74% Liquid Caustic Soda, seller's tank cars, basis 76%	2.50
70-74% Liquid Caustic Soda, Rayon Grade, seller's tank cars, basis 76%	2.60

• Dr. Konigsbacher Appointed to Evans Research

Evans Research and Development Corporation, 250 East 43rd Street, New York 17, N. Y., has announced the appointment of Dr. Kurt S. Konigsbacher to its staff as a Project Group Leader. He holds the degree of Dr. sc. tech. from the Federal Institute of Technology, Zurich, Switzerland. He received his B.A. degree from Dartmouth. Following a period in the U. S. Navy, he has, until recently, been associated with Foster D. Snell, Inc.

• Hilton-Davis Aids U of C

The Hilton-Davis Chemical Company Division of Sterling Drug Inc., is cooperating with the University of Cincinnati College of Medicine in the study of preventive medicine.

The plant physician lectures on the subject at the University, and the division opens its 22 buildings on Langdon Farm Road to the students for practical field inspections.

Recently 84 members of the sophomore class, under Dr. Alfred K. George, inspected preventive systems installed by Hilton-Davis to reduce occupational hazards. The theory behind the field trips is to create an awareness on the part of the students of the importance to health of industrial environment, and at the same time to acquaint them with the many safety measures adopted to protect chemical workers.

The cooperation with the University is part of a "good neighbor" policy instituted by James F. Thompson, vice-president of Sterling Drug and divisional general manager. In direct charge of these neighborhood relations, which include preventive measures to overcome atmospheric and sewage pollution is Chester H. Allen, safety director and director of the Hilton-Davis laboratories.

L. Balassa

• New Balassa Lab in New Bedford

Balassa Research Laboratories, New York, N. Y. and West Barrington, R. I., have acquired space in the former office building of Naushon Mills, Inc., at 59 Cove Street, New Bedford, Mass., where a new research and development laboratory now is under construction, according to an announcement by L. Balassa, Director.

The new unit of Balassa Research Laboratories (formerly L. Balassa & Associates) will be engaged principally in cellulose and textile research. Scheduled to be in operation in a few months, the new laboratory also will undertake some projects on plastics and starches.

The bulk of Balassa Research Laboratories' work on paints, pigments, adhesives, construction and equipment design reportedly will continue in the organization's present laboratories in Rhode Island, New York and New Jersey.

• Monsanto Efficiency-Test Experiments

Simple laboratory experiments for mill-testing the efficiency of a catalyst in eliminating two known causes of odors from urea resin finishing have been recommended by the Merrimac Division of Monsanto Chemical Company, Everett, Mass.

The know-how of comparing Catalyst AC with diammonium phosphate (DAP) was disclosed by Dr. Ralph F. Nickerson, group leader in the textile chemical research laboratory of Monsanto's Merrimac Division. Catalyst AC is a product of the textile chemicals department of the Merrimac Division.

The test method recommended by Monsanto specified placing equal quantities of concentrated urea resin solutions in watch glasses or foil cups. To one glass, five per cent of Catalyst AC based on the urea formaldehyde solids present is added. Three per cent of DAP on the same basis is added to the other. Both are evaporated to dryness on a hot plate.

With the DAP, resin soon starts to solidify and forms a thick mush in solution. In the case of Catalyst AC, the resin remains in solution until the mixture is practically dry.

When this stage is reached, both are cured for 15 minutes at 300 degrees Fahrenheit. The disc containing DAP appears as a light, frosty, porous cake. The Catalyst AC disc is dense, glassy and translucent.

The discs are broken up in water and allowed to stand for several hours after which the pH of each solution is measured. Average pH of the DAP sample is 2.9; that of the Catalyst AC solution, 4.5.

These solutions are then made alkaline with soda ash solution. The DAP sample has a fishy, amine odor as well as the odor of formaldehyde. Only a formaldehyde odor is obtained from the sample cured with the Monsanto product.

"It is probable that the resin solutions behave the same way on cloth as they do in the watch glass," Dr. Nickerson said, "and it follows that DAP causes resin to solidify during the early stages of the drying operation. When Catalyst AC is used, the resin probably remains in solution until the fabric is nearly dry and consequently can adapt itself to changes in pore shapes, caused by the shrinkage of fibers during drying.

"This means that there is a greater area of intimate contact—and possibly more complete reaction—between the resin and the fiber.

"The higher pH of AC-Catalyzed resins means there is less likelihood of fiber damage and, more important, less likelihood of the resin's decomposing into odorous amines during processing. It is possible, therefore, that Catalyst AC may reduce the danger of fabric odors by curing the resin under less acid conditions and by forming a dense resin that cannot trap gaseous by-products of the cure."

• Dye Production and Sales Decreased in 1949

The United States Tariff Commission recently released preliminary statistics on United States production and sales of dyes in 1949. This report, the ninth in a series showing preliminary statistics on production and sales of synthetic organic chemicals, gives statistics on production and sales of synthetic organic chemicals, gives statistics on production and sales of individual dyes grouped by Colour Index number and by Foreign Prototype number, as well as production and sales by chemical class and class of application.

The total output of dyes in 1949 was 139 million pounds, a decline from the

201 million pounds produced in 1948. Sales in 1949 amounted to 136 million pounds, valued at 142 million dollars, compared with 187 million pounds, valued at 164 million dollars, in 1948.

The production of dyes grouped by Colour Index number was 100 million pounds in 1949, compared with an output of 152 million pounds in 1948; the production of dyes grouped by Foreign Prototype number was 20 million pounds in 1949 compared with 28 million pounds in 1948; and the production of ungrouped dyes was 18 million pounds in 1949 compared with 22 million pounds in the preceding year.

Four chemical classes of dyes accounted for 86 percent of the total output of dyes in 1949. These were: Azo dyes, 41 percent; anthraquinone vat dyes, 19 percent; indigoid dyes, 13 percent; and sulfur dyes, 13 percent. The output of each of the four classes was smaller in 1949 than in 1948.

By class of application, the output in 1949 of vat dyes (45 million pounds) accounted for 32 percent of the total production of all dyes; direct dyes (30 million pounds) accounted for 22 percent; and acid dyes (18 million pounds) accounted for 13 percent.

Among the individual dyes produced in large volume are synthetic indigo, production of which totaled 13.4 million pounds in 1949, compared with 22.2 million pounds in 1948; sulfur black, 9.4 million pounds in 1949 compared with 13.5 million pounds in 1948 and 32.4 million pounds in 1947; direct black EW, 6.4 million pounds in 1949 compared with 14.1 million pounds in 1948; and anthraquinone vat jade green, 5.3 million pounds in 1949 compared with 4.0 million pounds in 1948.

Copies of the section on dyes may be obtained by writing to the U. S. Tariff Commission, Washington 25, D. C.

• International Textile Exhibition Dates Set

The dates for the International Textile Exhibition for textiles, clothing and machinery to be held in Lille, France have been set for April 28-May 20, 1951. The exhibition will be held at the "Parc Des Expositions".

Among the sponsoring organizations are: International Wool Textile Organization, International Silk Association, International Cotton Federation and the European Association of Clothing Manufacturers.

Information on the exhibition may be had by writing to the Secretariat De L'Exposition 10, rue d'Anjou-Paris- (8e), France.

G. W. Fine

• Fine Appointed to New Post

The appointment of G. W. Fine as Assistant Sales Manager of U. S. Stoneware's Plastic Coatings Division has been announced by Howard Farkas, executive vice-president of The U. S. Stoneware Co., Akron, Ohio.

Mr. Fine had been associated with Sherwin Williams Co. for seven years, first as a laboratory technician and later as a member of their sales staff.

• King Appointed to Synthetics Department

Frederick C. King has been appointed technical representative of the Synthetic Fibers Department, Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corporation. Prior to coming with Carbide, Mr. King was associated with Burlington Mills. He was previously connected with E. I. du Pont de Nemours and Company, Inc.

• GDC Moves Chicago Office

The General Dyestuff Corpoartion has moved its Chicago Office and Laboratory from 731 Plymouth Court to 310 West Polk St. The new premises have greater office space and an enlarged modern laboratory to service technical problems of the textile, paper, leather, rubber, soap and chemical industries. Warehousing and loading facilities have been enlarged.

• P.T.I. Graduates 109

One hundred and nine seniors, the largest class in the school's history, received their awards at the Commencement Exercises of the Philadelphia Textile Institute, held Saturday, June 24th at School House Lane and Henry Avenue, Germantown, Pa.

Dr. John H. Dillon, Director of The Textile Research Institute, Princeton, New Jersey, gave the principal address at the exercises.

Of the 79 students receiving Bachelor of Science Degrees in Textile Engineering, 57 were in the Textile Engineering course, 19 were in the Chemistry, Dyeing and Printing course and 3 were in the Knitting course.

In addition to those receiving degrees, 30 other students received diplomas for completion of the three-year course. Six evening school students also received Certificates of Proficiency.

After the Invocation by Dr. Robert T. Tumbelston, Bertrand W. Hayward, Director of the Philadelphia Textile Institute presented Dr. John H. Dillon. Following Dr. Dillon's speech, Rinaldo A. Lukens, President, Philadelphia Textile Institute, spoke briefly.

Prizes for outstanding scholastic achievement were awarded by Dean Richard S. Cox.

The Seniors receiving prizes for Outstanding Scholastic Achievement were as follows:

Sarah Tyler Wister Prizes—(Highest Standing for Full Length of Course)—

Textile Degree

1st Prize—Thomas William Qualman, Saginaw, Michigan.

2nd Prize—Louis Wenig, Bronx, New York.

Chemistry, Dyeing and Printing Decree

1st Prize—Richard Newell Combs, Towaco, New Jersey.

2nd Prize—Jennings B. Koller, Jr., Philadelphia, Penna.

Textile Diploma

1st Prize—Walter Edward Kramer, Burlingame, California.

2nd Prize—Howard John Deis, Jr., Hazleton, Penna.

A.A.T.C.C. Prize—(For proficiency in Chemistry, Dyeing and Printing—Senior Year)—Richard Newell Combs, Towaco, New Jersey.

To the members of the Senior Class who have high scholastic standing together with Leadership, Initiative, Personality and Student Activities:

Phi Psi Prize—Frederick R. Kern, Ridgefield, New Jersey.

Delta Kappa Phi Prize—Louis Wenig, Bronx, New York.

Sigma Phi Tau Prize—Lloyd Robert Crandall, Ashaway, Rhode Island.

• Examination Announced for Cotton Technologist

An examination for Cotton Technologist has been announced by the U. S. Civil Service Commission, Washington 25, D. C., to fill positions paying from $3,825 to $6,400 a year in the Production and Marketing Administration of the De-

partment of Agriculture. These jobs are located in Washington, D. C., and in the southern and southwestern parts of the United States.

To qualify, applicants must have completed a 4-year college course in one of the branches of cotton technology or have had 4 years of appropriate technical experience. In addition, they must have had from 1 to 3 years of professional experience in one of the branches of cotton technology. Provision is made for the substitution of pertinent graduate study for 2 years of the specified professional experience. The examination announcement gives full details concerning the requirements to be met.

Interested persons may also obtain applications from most first- and second-class post offices or from civil service regional offices. Applications will be accepted until further notice.

• Hollies Joins Harris Staff

Norman R. S. Hollies has joined the staff of Harris Research Laboratories, 1246 Taylor St., N.W., Washington 11, D. C., where he will be engaged in physical and chemical investigations of high polymer systems. Dr. Hollies, a graduate of McGill University, has been a Research Associate for the past three years at the Harvard Medical School on the physical-chemical properties of proteins.

• Polyethylene Interior Coating

The Delaware Barrel Co., Inc., Wilmington and Columbia Avenues, Wilmington, Delaware, has recently developed a method to coat the interior of steel drums, pails and hackneys with Polyethylene on a production basis of interest to those packaging their products in stainless steel, aluminum, glass, phenolic coatings, rubber and Polythene bags.

This is the first time that Polyethylene has been used as an actual protective coating on steel in this type of container with low cost, it is stated, and many products formerly shipped in heavy duty drums with prohibitive costs can now be shipped in standard items with proportional savings.

• 3rd Westvaco Phosphorus Furnace

The Westvaco Chemical Division of Food Machinery & Chemical Corporation, New York, N. Y., reportedly will construct a third electric furnace unit for the manufacture of elemental phosphorus at its Pocatello, Idaho, plant, where two phosphorus furnaces are presently in operation. Power will come from the hydroelectric system of the Idaho Power Company and phosphate rock from the near-by deposits on the Fort Hall Indian Reservation, it is stated.

Simultaneously, a plant for the processing of phosphorus into the usual grades of soluble phosphates used by the soap, textile, oil and chemical industries will be erected at Lawrence, Kansas, it is reported, some thirty-five miles west of Kansas City, Missouri. This site, on the Kansas River and adjacent to a university town offering attractive living conditions for operating and supervisory staffs, has been selected not only as a suitable location for a phosphate unit but also with an eye toward future expansion into other chemical operations.

An engineering-construction contract for the detailed design and construction of these units has been let to the Bechtel Corporation of San Francisco. Responsibility for basic design is in the hands of John D. Anderson, Chief Engineer of the Division, and his staff. Completion of both units is contemplated by late spring of 1951.

• DCAT Committee Chairmen Appointed

Harold C. Green (L. Sonneborn Sons, Inc.), Chairman of the DCAT, has announced the following chairmen to head committees for the 60th Annual Meeting of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, to be held at Shawnee Inn, Shawnee-on-the Delaware, Pa., on September 22-23:

Banquet—C. P. Walker (Citro Chemical Company); *Business Program*—Fred G. Singer (E. I. duPont de Nemours & Co., Inc.); *Evening Entertainment*—C. A. Hanford (Pharmaco, Inc.); *Greetings*—Robert B. Magnus (Magnus, Mabee & Reynard, Inc.) *Golf*—William W. Huisking (Chas. L. Huisking & Co., Inc.); *Ladies Golf*—Mrs. F. Dean Hildebrandt; *Ladies Card Party*—Murray Breese (Murray Breese Associates); *Memorials*—William S. Auchincloss (Oil, Paint & Drug Reporter); *Misc. Sports Activities*—J. G. Flanagan (S. B. Penick & Company), *Vice Chairman*—J. David Hayden (R. P. Scherer Corp.); *Publicity*—Ira P. MacNair (MacNair-Dorland Co.); *Receptions*—Lloyd I Volckening (The Ivers-Lee Company); *Registration*—C. M. Macauley (Pro-phy-lac-tic Brush Co.); *Transportation*—William H. Sheffield, Jr. (Innis, Speiden & Co.)

Abstracts—

(Concluded from Page 452)

added to the dyebath, and boiling is continued for another hour. After drying, the two samples are compared and the degree of migration of the dye is determined.

The report goes into great detail in specifying proper conditions for making the tests. It concludes with a table of thirty selected dyes which have been classified by this method.—W.H.C.

Mechanism of Microbiological Decomposition of Cellulose

R. G. H. Siu, *Textile Research J.* **20**, 281-8, May, 1950.

We in the textile industry are interested in the breakdown of cellulose by microorganisms because it brings about an annual damage to cotton textiles which amounts to hundreds of millions of dollars. And we want to prevent it.

When the fungus or bacterium lands on the cotton fiber it begins to germinate in the presence of adequate moisture and favorable temperature. The first thing that happens is a digestion of the cuticle or outer noncellulosic layer. The next step involves the degradation of the cellulosic portions of the fiber itself. The fungus apparently attacks the cellulosic wall at the point of immediate contact, and penetrates directly into the lumen. There the fungus grows profusely, digesting the fiber from the inside outward.

Some difference is observed in the attack of fibers by bacteria, which are not able to penetrate the fiber as fungi are. Instead, they etch the surface; the attack is from the outside inward.

The author describes the chemical structure of the cotton fiber, and discusses various theories which have been proposed to explain the biochemical transformations which the cellulose molecule undergoes when attacked by microorganisms. He concludes the article as follows:

Since the attack is a localized one, it should be theoretically possible to make the cotton fiber mildewproof by coating it with a thin layer of resistant material. We can produce this protective barrier by a surface chemical reaction on the fiber. Since the degree of resistance is not determined by the nature of the substituent, it should be possible to use reacting groups which by their very nature possess other desirable properties, such as flameproofness, water-repellency, and photochemical stability. The resulting mildew-resistant treatment should be resistant to leaching, inasmuch as it is an integral part of the fiber. The treatment should also be nontoxic to human beings It is hoped that this idea will gain momentum, so that before long such treatments will be standard mill practice.—W.H.C.

CALCO dyelines

No. 15 of a series

PUBLISHED BY AMERICAN Cyanamid COMPANY CALCO CHEMICAL DIVISION,
DYESTUFF DEPARTMENT, Bound Brook, New Jersey
New York • Chicago • Boston • Philadelphia • Charlotte • Providence

Application Hints for Azoic Dyes

Azoic dyes are insoluble and must be manufactured on the fiber by the dyer. Their application, therefore, involves additional knowledge and control beyond that devoted to other dyeing procedures.

Satisfactory dyeings are based on attention to the following points:

1. Preparation of an absolutely clear stock solution of naphthol.
2. Perfect clarity of the naphthol bath throughout the impregnation period.
3. Removal of excess naphthol liquor and superficially attached naphthol before coupling.
4. No hydrolysis or other decomposition of naphthol before coupling.
5. The correct proportion of base or salt to naphthol.
6. Coupling at the best pH and temperature for the specific base or salt involved.
7. No decomposition in the coupling bath during coupling.
8. Adequate but not excessive aftertreatment to remove loosely fixed azoic dye.

Calco technical field service men are well versed in the theory and mill practice involved in the application of azoic dyes and are available to discuss and demonstrate the methods which contribute to the practical achievement of these eight ideals.

Popular combinations of Calco Naphthosols with Calco Naphthosol fast color bases and fast color salts produce shades which combine richness, brightness, good fastness and moderate cost that cannot be obtained with any other class of dyes. The Calco line of azoic dyes includes:

Calco Naphthosol	*Calco Naphthosol Fast Color Base*	*Fast Color Salt*
ASF Conc.	Red KB	—
SWF	Red B	Red B
D	Red 3GL	Red 3GL
RL	Red GL	Red GL
BO	Scarlet G	—
BS	Scarlet RC	Scarlet R
ASP	—	Scarlet GG
OL	—	Orange GC
G	Bordeaux GP	Bordeaux GP
—	Blue B	Blue B
—	—	Blue VB

A Unique Fluorescent Compound

Calcofluor* White RW, recommended for acetate, nylon, silk and wool, increases the whiteness of bleached or scoured fabrics by causing them to fluoresce. By this phenomenon, ultraviolet rays are converted to visible light. The fluorescence of Calcofluor White RW is a bluish-white which neutralizes the natural yellowness of the fiber. In addition, by converting ultraviolet into visual light, the material will reflect a greater quantity of light than untreated material.

Pastel shades treated with Calcofluor White RW appear much richer and brighter in daylight.

Calcofluor White RW works well over a wide range of pH. It can, therefore, be applied during many processing operations such as scouring, bleaching, dyeing and rinsing. It can be dispersed in soap or sulfated alcohol, or dissolved in alcohol or 10% sulfuric acid solution—depending on conditions required.

*Trade-mark

For The Textile Bookshelf

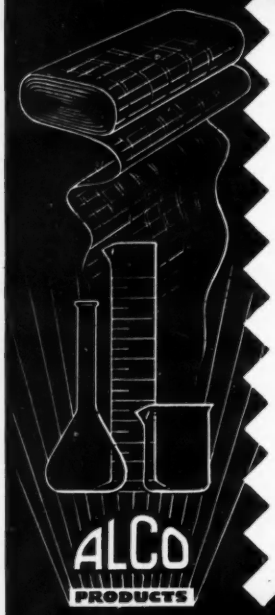
Determination Of The Solubility Of Dyes (Calco Technical Bulletin No. 801) by C. L. Zimmerman and H. R. McCleary. Discusses theoretical aspects of solubility, methods of attaining saturation, lists the approximate maximum solubilities of several Calco acid and direct dyes.

Coloring With Resin-Bonded Pigments (Calco Technical Bulletin No. 777)—reviews the history, general theory, methods of applying these pigments to textiles, their application in printing and in plain shade coloring.

Revision – Descriptive Index of Calco Technical Bulletins (Calco Technical Bulletin No. 761A, New Second Edition)—abstracts all bulletins published to date; helpful cross-index aids in selecting bulletins pertaining to special problems.

Reprinted—The Practical Art of Color Matching (Calco Technical Bulletin No. 573) by William H. Peacock, Technical Service Department. A popular bulletin reprinted to include the latest thinking on this important subject.

Approximately 150 trailer trucks and tank trucks pass through the Calco gatehouse every day.



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NaCl	0.40
Other Na_2O (not oxidizable)	1.35
Na_2S	61.00

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SINCE 1896, we have served continuously as a manufacturer of industrial soaps and detergents.

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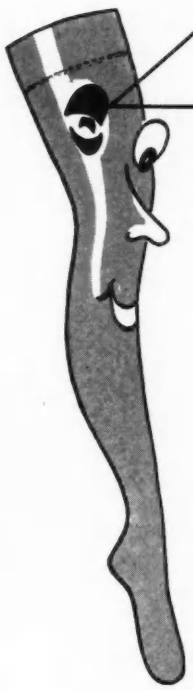

on 60 gauge machines

Knitting mills are waving good-bye to "Shiners" with Bleached Glycerine Softener CUK in their 60 gauge machines. You need only this one solution to soften nylon sizing evenly, making yarn more pliable for knitting with proper tension. If desired Bleached Glycerine Softener CUK may be combined with Needle Oil NE for superior lubrication of needles and carrier tubes. Needles and tubes are kept free of nylon size, tube life is increased.

Equally effective on mono- or multi-filament nylon yarn.

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Oils for all textile conditioning requirements.

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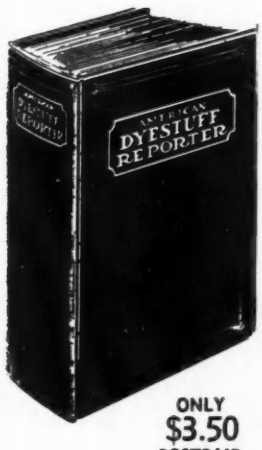

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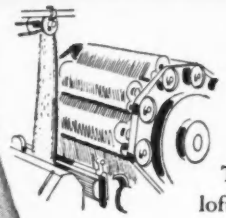

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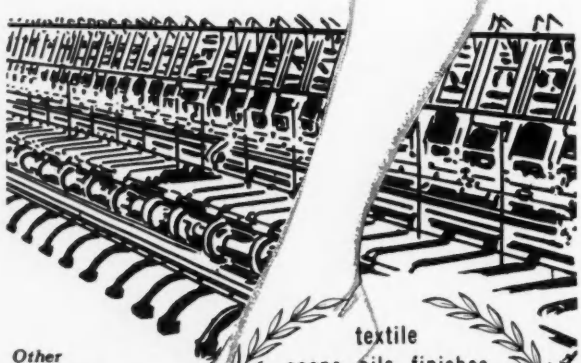

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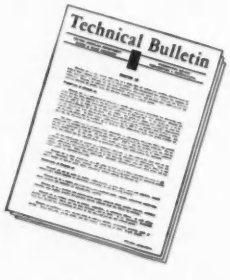

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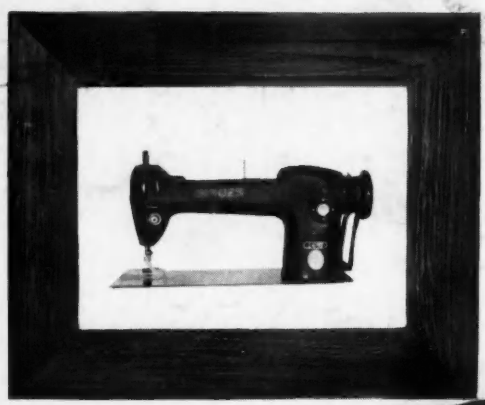

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